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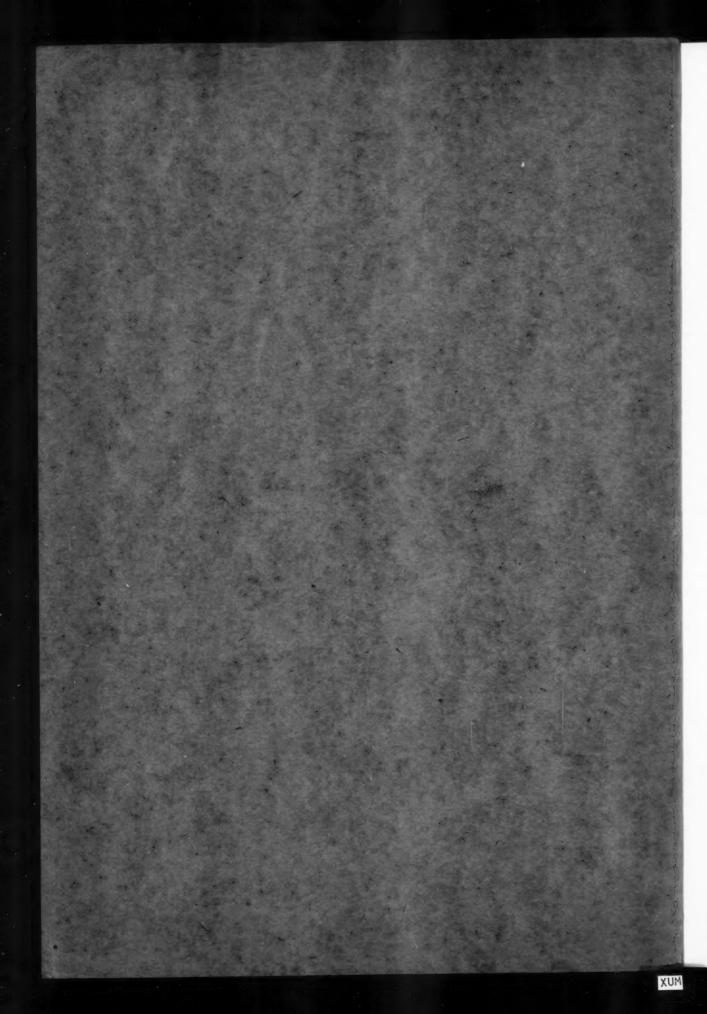
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VOL. 10, No. 4

APRIL, 1943

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CHARLES DICKENS

# Psychoneurotic Men of Genius

Charles Dickens, the renowned British novelist, was subject to cyclic moods of pronounced depression characterized by intense nervous irritability and by the shedding of tears all day long. He was exceedingly sensitive to his own experiences as well as to the suffering of others.

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- 2. Superficial temporal artery & vein
- 3. Temporal branch of facial nerve
- External carotid artery & posterior facial vein
- 5. Superficial cervical lymph nodes
- 6. External jugular vein
- 7. Accessory nerve & internal carotid artery
- 8. Platysma muscle
- 9. Fourth cervical nerve
- 10. Superior position of sternocleidomastoid muscle
- 11. Deep cervical lymph nodes
- 12. Fifth cervical nerve

- Posterior supraclavicular nerve & anterior jugular vein
- 14. Superficial cervical artery & vein
- 15. Middle supraclavicular nerve & subclavian artery
- 16. Transverse scapular artery & vein
- 17. Inferior position of
- sternocleidomastoid muscle
- 18. External maxillary artery & anterior facial vein
- Submaxillary lymph nodes & digastric muscle
- Submaxillary gland & mylohyoid muscle
- 21. Submental lymph nodes & hypoglossal nerve
- 22. Superior laryngeal artery & nerve

- 23. Superior cervical ganglion
- 24. Superior laryngeal vein & omohyoid muscle
- 25. Superior thyroid artery & vein
- 26. Ansa hypoglossi
- 27. Common carotid artery & sternothyroid muscle
- 28. Middle cervical ganglion & phrenic nerve
- 29. Vagus nerve
- 30. Thyroid gland & middle thyroid vein
- 31. Internal jugular vein
- 32. Sternohyoid muscle
- 33. Jugular lymphatic trunk
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Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 10, NO. 4



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McGuire et al. (1952), J. Antibiotics & Chemo., 2:281, June.
 Heilman et al. (1952), Proc. Staff Meet. Mayo Clin., 27:385, July 16.
 Haight and Finland (1952), New Eng. J. Med., 247:227, Aug. 14.





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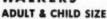
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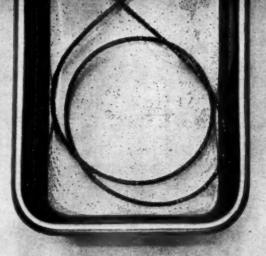
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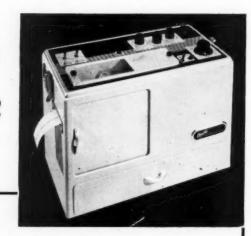
- 1. Canad. M. A. J. 66:151 (Feb.) 1952.
- 2. J. Urol. 67:762 (May) 1952.
- 3. Ibid. 69:315 (Feb.) 1953.

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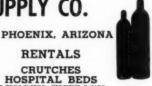
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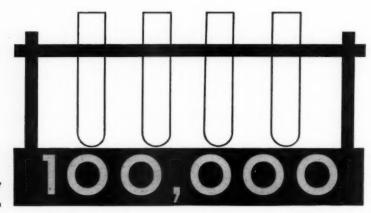
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- Blotner, H., and Marble, A.: New England J. Med. 245:567 (Oct. 11) 1951.
   Getting, V. A., and others: Diabetes 1:194, 1952.
   Wilkerson, H. L. C., and Krall, L. P.: J.A.M.A. 135:209 (Sept. 27) 1947.

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<sup>1</sup>Evans, R. R., and Rackemann, F. M.; A.M.A. Arch. Int. Med. 90:96-127, July 1952.

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VOL. 10, NO. 4



APRIL, 1953

# Original ARTICLES

# THE USE OF CORTISONE IN A PATIENT WITH ACTIVE PULMONARY TUBERCULOSIS

Jason E. Farber, M.D.(1,2) and Joseph Ross, M.D.(1,2) Oakland, California

There is a definite need for more information about the use of cortisone in the treatment of tuberculosis. Reports to date are inadequate as to the value, the proper administration, and the dangers in using the hormone. In the laboratory animal with tuberculosis, the effects of cortisone seem to be uniformly detrimental (1,2,3). In human beings with acute tuberculosis, Le-Maistre et al. (4) obtained rapid clinical improvement with cortisone. This was associated with roentgenographic clearing of pulmonary lesions. On termination of treatment there was a swift return of signs and symptoms of acute illness. Thorn(4) found definite benefit from the drug in patients with Addison's disease presumably due to tuberculosis; his patients received streptomycin concurrently. This was also the experience of Browne(4). Kinsell(5) cites the value of ACTH and cortisone when combined with intensive chemotherapy in the treatment of tuberculous meningitis. It is his opinion that this combined type of therapy will eventually have a place in the treatment of tuberculosis.

Contrariwise, there is a growing number of reports indicating the dangers in the use of cortisone in human tuberculosis. One report(6) of 20 collected cases revealed unfavorable end results after initial symptomatic improvement. The reports of Hollander(4), Fred(7), Popp(8) and Kleinschmidt(9) and King(10) also demonstrate the hazards in the use of cortisone in tuberculosis.

Case Report

A seventy-four year old woman became acutely ill with dyspnoea, a hacking cough, fever and prostration.

She was known to have long standing, active, fibroulcerative, pulmonary tuberculosis. Her sputum was persistently positive. She had received prolonged bed rest, pneumoperitoneum and chemotherapy (streptomycin and PAS) without apparent benefit. Apart from this, she had been under treatment for congestive heart failure and a recurrent cardiac arrhythmia. She was being maintained on a program which included a salt poor diet, pronestyl, mercuhydrin, vitamin supplements and sedation.

Physical examination revealed an acutely ill, poorly nourished, elderly woman. She was dyspnoeic. She coughed repeatedly, raising large amounts of sticky, grayish, purulent sputum. Her face appeared flushed and cyanotic. Her tongue was swollen, red, dry and coated. Her trachea was in the midline. Her chest was resonant; harsh breath sounds and coarse rales were heard throughout both sides. The heart tones were of poor quality, but regular and rapid. The liver was barely palpable and there was moderate sacral and tibial edema.

The temperature was 102.4°F., and the respirations, twenty-eight per minute. The blood pressure was 150 mm. Hg. systolic and 100 mm. Hg. diastolic.

The patient was given combined penicillin and streptomycin and crude liver extract intramuscularly. Some hours later she complained

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that "her heart was running away" and she suddenly became orthopnoeic. Her heart rate was more than 150 per minute. This bout of paroxysmal supraventricular tachycardia was terminated after several hours by pronestyl and demerol given parenterally. Repeated emesis followed this. In the next 24 hours her condition continued to deteriorate. She showed anxiety and restlessness. Her lips became swollen, dry and fissured. She seemed to have difficulty raising her sputum. Her cyanosis deepened. She became disoriented and incoherent. She appeared to be in extremis.

Because of this critical situation the patient was given 100 mg. of cortisone intramuscularly. This was repeated in one hour and then every The response was remarkable. four hours. There was rapid alleviation of the acute symptoms. Her breathing eased, the cyanosis disappeared, her mental clarity returned. The temperature dropped, and her pulse rate slowed. She accepted food. Cortisone was continued for ten days, the total dose being 2400 mg. Oral therapy meanwhile replaced the injectable proparation. Streptomycin and penicillin were given in conjunction with the cortisone.

Convalescence was uneventful, and complete recovery from the acute respiratory illness followed. Since then, the patients general condition has remained reasonably good. There was no anatomical change in the pulmonary tuberculosis as shown by roentgenograms of the chest taken just before the acute illness and one, six, eleven and fourteen months after cortisone was given. Her sputum remains positive.

### Comment

An elderly patient under treatment for active pulmonary tuberculosis and congestive heart failure developed an acute suppurative bronchitis and bronchiolitis. This was characterized by prostration, dyspnoea, cyanosis, tachycardia, cough, and considerable sticky purulent sputum. She was febrile and toxic. She developed a glossitis and cheilitis, then toxic cerebral symptoms (disorientation, delerium). In spite of vigorous antibiotic and supportive therapy her condition rapidly became worse. Because a fatal outcome seemed imminent, the patient was started on a program of cortisone therapy. This was given with some trepidation since the few advance reports concerning the use of cortisone in tuberculosis in March of 1951 were discouraging. However, antibiotic therapy was given

concurrently. This included a gram of dihydrostreptomycin daily. As noted above, the results of cortisone therapy were miraculous. Within hours, all signs and symptoms of her disease diminished. Recovery from the acute illness followed with certainty. Of further importance is the roentgenological evidence that there was no anatomical change in the pulmonary tuberculosis. Chest films taken one, six, eleven and fourteen months after the administration of cortisone show no change in the fibro-cavitary lesion in the left upper lobe or in the fibrotic lesions in the right upper lobe. Sputum, however, remains positive.

Factors which might have been operative in reducing the danger in the use of cortisone in this case were 1) combination of streptomycin with the cortisone 2) the type of tuberculosis, viz., chronic fibroulcerative rather than acute exudative disease as is produced in experimental animals.

#### SUMMARY

A seventy-four year old woman with a chronic. active, fibroulcerative pulmonary tuberculosis and a failing heart developed an acute suppurative bronchitis and bronchiolitis. In spite of antibiotic and supportive therapy, she rapidly progressed downhill and became semimoribund. Cortisone was administered and was followed by dramatic recovery from the acute illness. There was no roentgenographic change in the tuberculosis immediately or within fourteen months after the use of the cortisone.

#### **ADDENDUM**

Since the completion of this paper the Committee on Therapy of the American Trudeau Society submitted its preliminary report on the Effect of Cortisone and/or Corticotropin on Tuberculous Infection in Man. (Am.Rev.Tuberc., 1952, 66, 254.) From an analysis of 81 treated cases they conclude that these hormones are potentially hazardous in active tuberculosis and at this time should not be used in the treatment of the disease. They urge extreme caution in its use in inactive tuberculosis. If the hormones are used for nontuberculous conditions in the patient with active tuberculosis, combined therapy with streptomycin and PAS is recommended.

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### THE PROPER TREATMENT OF VARICOCELE

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A varicocele is an elongated, tortuous dilatation of the veins of the pampiniform plexus, frequently desribed as varicose veins of the scrotum. It is a common defect of the male anatomy, but one that is often improperly handled by many physicians. This situation probably exists because our textbooks still lag years behind the advancements in therapy.

The exact incidence of varicocele is uncertain, but is larger than most of us realize. Doctors doing routine physical examinations on military or industrial personnel for the first time are often surprised at the number of men showing this defect. In one group(1) of 1500 army age men 16.5% were found to have varicoceles. Of this number 37 men had distressing or disabling symptoms, 2.5% of the total examined.

A varicocele is caused by inadequate drainage of the left internal spermatic vein into the renal vein. At times this is caused by obstruction of the area by a renal tumor, a massive hydronephrosis or a peri-renal mass. In most instances, however, it is believed that this condition is caused by the emptying of the internal spermatic vein into the renal vein at right angles. This is not usually the case on the right side where the vein empties obliquely into the inferior vena cava. Therefore, varicocele is almost always found on the left side. Compression of the internal spermatic vein between the aorta and the origin of the superior mesenteric artery is believed by some investigators to be a contributory cause (2). Post-mortem studies have demonstrated the absence or incompetency of the valves of the internal spermatic vein in most cases of varicocele.

When symptoms occur in those who have a varicocele, they consist of a feeling of heaviness in the testicle or a dull drawing sensation in the groin and scrotum. At times the size of the varicocele is such that the weight of the mass of

veins is actually disabling and some relief is imperative. At this point it is well to realize that the symptoms of the patient do not always go hand in hand with the size of the varicocele. A large varicocele may be quite symptomless, while small ones may disturb a maladjusted nervous person to a very marked degree. In some cases varicocele is associated with inguinal hernia and sharp, shooting inguinal pains or symptoms of strangulation may occur. In one series(4) of 145 patients with symptomatic varicocele, 25% were found to have an associated hernia. Conversely, of 102 patients operated for left inguinal hernia, 14% had a varicocele.

#### TREATMENT

The vast majority of varicocele cases require no treatment because they have no symptoms. If the condition is of recent development and yet is symptomless, the patient should have a complete genito-urinary investigation to rule out the presence of kidney pathology. 9% of left-sided kidney tumors had a recent varicocele according to one investigator.

In the group of patients where the varicocele is causing some minor discomfort, treatment by reassurance and possibly the wearing of a scrotal suspensory is indicated. These measures control most cases and further therapy is unnecessary.

In those individuals where the discomfort is so great that suspension of the scrotal sac is not adequate, surgery must be considered.

#### VARICOCELECTOMY

The classic varicocelectomy described in most textbooks of surgery and urology consists of a high scrotal incision, exposure of the cord and excision of about 5 cm. of the dilated veins, care being taken to avoid damage to the artery of the vas deferens. The ligated ends of the cord are then securely approximated in order to elevate the dependent left testacle. Those of you who have attempted this procedure know that is is a difficult undertaking and realize that damage to

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the vas artery is a mishap that is not easily avoided.

The results of this type of varicocelectomy are riddled with complications. Atrophy of the testicle, hydrocele formation, post-operative hemorrhage, thrombosis of the remaining veins in the pampiniform plexus, failure to cure the varicocele, and the high frequency of wound infection because of the location of the incision, are all encountered. The exact incidence of these complications is not reported by most writers on the subject, but a common figure cited for atrophy of the testicle is 10%. Therefore, many surgeons have been reluctant to advise operation even in disabling cases of varicocele.

#### ANATOMY

If we understand the basic circulation of this region, a more anatomical procedure suggests itself. The pampiniform plexus of testicular and cord veins is drained by deep and superficial venous systems. The deep system is made up of the internal spermatic vein, the vein of the ductus deferens and the external spermatic veins. The first two mentioned anastamose with each other within the epididymis and testicle. The internal and external spermatic veins anastamose within the cord. The superficial system is composed of the superficial and deep epigastric veins, the superficial internal circumflex vein, the scrotal tributaries of the superficial and deep external pudendals, and the internal pudendal vein. All of these anastamose with each other and the external spermatic vein near the external inguinal ring within the cord. (2,3,4.)

This venous drainage system of the testicle was first described in 1918 by Ivanissevich.(5) At that time he recommended high intra-abdominal ligation of the internal spermatic vein as treatment of painful varicoceles. Others modified his suggestions and simplified the procedure, although this evolution has been slow and not well publicized. Only in recent years has this operation received attention in the United States.

# LIGATION OF THE INTERNAL SPERMATIC VEIN

An incision is made as for a herniorrhaphy except that the length rarely needs to be more than 6 cm. If an unsuspected hernia is encountered, extension of the incision will be necessary. The aponeurosis of the external oblique muscle is incised down to or through the external inguinal ring, being carried laterally to exposed the abdominal inguinal ring. The cremasteric

muscle and fascia are incised longitudinally at the proximal end of the inguinal canal, and the internal spermatic vein is dissected free for a distance of about 5 cm. The vein is securely ligated at the internal ring and at the distal portion of the dissection. The vein is excised between the ligatures, the proximal end being allowed to retract into the abdominal cavity. In some instances the internal spermatic vein is formed inside the abdominal inguinal ring and there are two or three large branches instead of a single vein in the cord at the lateral end of the inguinal canal. Each vein is ligated in such cases. The longitudinal incision in the cremasteric muscle and fascia is closed transversely with a running suture. The distal end of the ligated internal spermatic vein may be included in this closing stitch. Closure of the cord in this manner causes some elevation of the dependent left testicle.

Careful search of the cord for possible indirect herniation should be done in all cases. In such instances high ligation of the sac and repair of the posterior wall of the inguinal canal are necessary. In Table 1 the incidence of concurrent hernia and varicocele found by various investigators is recorded. Only the cases with hernia were treated surgically in the first series listed.

Postoperatively the patient should wear a scrotal support for about one week. There appears to be no contraindication to immediate ambulation in most of these cases. Hospitalization is usually unnecessary after three or four days in patients without hernia repairs.

Table 1. Hernias Found With Varicocele

Series	Cases	Hernias	%
Javert and Clark, 1944	145	37	25%
Riba, 1947	23	3	13%
Lewis, 1950	42	8	19%
Price, 1950	12	2	17%
TOTALS	222	50	22.5%

#### RESULTS

Although the basic ideas were expressed in 1918, this operation was not done to any appreciable extent in the United States until the latter portion of World War II when several series of cases were reported. The results are uniformly gratifying and are charted in Table 2. Of 177 cases so treated, 173 were cured. Lewis' three failures were attributed to neglect in ligating each vein passing through the internal abdominal ring. Two of these were cured by a second operation and he believes the third can

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be cured by a repeated procedure. The unsatisfactory result obtained in one of the author's cases was probably caused by incomplete dissection. The patient hed previously undergone a left inguinal herioplasty and the cord was scarred to such an extent that the veins could not be accurately identified and dissected. This patient was not relieved of either the varicocele or his symtems of discomfort.

Table 2. Results of Ligation of Internal Spermatic Vein for Varicocele

	Cases	Cases	Surgical
Series O <sub>1</sub>	perated	Cured	Failures
Javert and Clark, 1944	32	32	0
Riba, 1947	23	23	0
Palomo, 1949	40	40	0
Lewis, 1950	42	39	3
El-Sadr & Mina, 1950	28	28	0
Price, 1950	12	11	1
TOTALS	177	173	4
		-	

In most cases the varicocele is dramatically reduced in size within 72 hours. Within ten days it is imperceptible to inspection. The aching or

dragging sensation that disturbed the patient pre-operatively has usually disappeared by the time the tenderness leaves the operative site.

The only complication reported in these series was the presence of transitory thrombosis in some of Palomo's cases. His technique varies somewhat from that described above which probably explains these minor complications.

#### CONCLUSIONS

The high incidence of postoperative complications previously seen following varicocelectomy has been eliminated by the surgical technique described. Surgeons no longer need to hesitate in advising surgical therapy in cases of symptomatic varicocele.

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## DUTIES OF PHYSICIANS TO EACH OTHER

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When requested to take part in this symposium, I was given an outline of the field to be covered by me, listing seven points. These looked vaguely familiar and further investigation showed these points to be the seven sections of Chapter III of the "Principles of Medical Ethics of the American Medical Association." It seems entirely superfluous to recount to this enlightened group the well known principles of medical ethics, to all of which you have subscribed, because to be a member of this staff you must be a member of the Maricopa County Medical Society and, ipso facto, a member of the American Medical Association, and must have given your assent to these "Principles."

The best course, therefore, would seem to be to take these seven sectional headings which have been assigned to me and discuss some interesting departures from the principles set forth, as they have been observed in this community during the past forty years.

1. Duties of a Physician to Uphold the Honor of the Profession. Section 1, Chapter III, reads in part:-

(Read in Symposium on Medical Ethics, at Staff Meeting of cod Samaritan Hospital, Phoenix, Ariz., October 25, 1948.)

"The obligation assumed on entering the profession requires the physician to comport himself as a gentleman, and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness.'

It is an interesting speculation how many of the students in our medical schools, or practitioners who have graduated from them, chose the practice of medicine as a "vocation" as contrasted with a business or a socially approved means of livlihood. I was interviewed recently by a High School student who plans to study medicine; he came with a prepared list of questions, and among them was the rather searching one as to my motive for choosing this profession,-whether it was primarily to render service, for financial returns, or to gain social approval. The question is pertinent. The word "vocation" comes from the Latin "vocare," which means to call. It implies that the motivation for choosing the profession of medicine is a response above the animal level of satisfying the physical needs; it is a call from the needs which a person sees in the world about him, or a call from

within coming from the higher levels of life,the sense of values. Medicine therefore, is supposed to be a vocation or calling, as contrasted with a trade or business. It belongs to the useful professions and this sphere of usefulness every individual practitioner is obligated to extend and enlarge. My medical mentor, when I was a young doctor just starting practice in Phoenix, was Dr. Otto E. Plath; one of his somewhat facetious remarks was that you could always tell how bad a community is by the number of doctors, lawyers and preachers it has. The number of doctors is an index of the prevalence of disease, the number of lawyers indicates the amount of crime, and from the number of preachers you can estimate the number of sinners in the community. The rapid increase in our physicians would seem to indicate a growing community need in fighting or treating disease. To meet that need should be a doctor's first consideration.

#### 2. Medical Societies.

"In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere or usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy and means in order that these societies may represent the ideal of the profession."

Sounds like one of those statements to which we could all respond,-"Amen, pappy pass the biscuits." It would be interesting if we could take a poll on the motivation of our doctors in joining medical societies. How many members of this staff, for example, joined the county medical society because of these high sounding motives, or because county society membership is a prerequisite for staff membership, and staff membership is required before a doctor can bring his patients into the hospital. I well remember the scream of agony from one of our doctors when we jumped the county society dues from five dollars to ten dollars and the state association dues from three dollars to five dollars. This doctor was very fond of good cigars so I inquired how many of them he smoked a day and what they cost; he proudly boasted that he smoked only good cigars, not less than two for a quarter and he consumed from six to ten a day. So, I told him that for what he thus sent up in smoke in one month he could pay his dues in the county society, the state association and the Southwestern Association, and his subscription to the A.M.A. Journal. He stayed in the society, but not at the expense of his cigars. He still looked on society membership as a luxury and smoking as a necessity.

3. Deportment. This section of the Principles is almost entirely quoted from Hippocrates:—

"A physician should be an upright man, instructed in the art of healing. Consequently he must keep himself pure in character and conform to a high standard of morals, and must be diligent and conscientious in his studies. 'He must also be modest, sober, patient, prompt to do his whole duty without anxiety; pious without going so far as superstition, conducting himself with propriety in his profession and in all the actions of his life."

You have to hand it to the Greeks. If Hippocrates said all that in Greek, it was a marvellous language. It all boils down to practicing the Golden Rule, after first being the kind of person who knows what the Golden Rule is and who wants to practice it. Much of the Golden Rule practice is on the same ethical level as was once voiced by my oldest grand-daughter, when she was six years old. After hearing the expression "forgive us our trespasses as we forgive those who trespass against us," in church, she wanted to know the meaning of this. Her mother explained that when a person injures us we must be nice to him, just as we want him to be nice to us under similar circumstances. The grand daughter took all this in and put her own interpretation on it; when she said her prayers that night, she said, "Dear God, when Peter throws a rock at me help me to be nice to him, so that when I throw rocks at him, he will be nice to Even if we have no higher standard of ethics than this, it would be quite an advance over the common practice of "doing unto others what you expect them to try to do to you, but do it first."

Under this section should come the matter of ethical deportment in consultations. I learned medical ethics the hard way when I located in Phoenix in 1907. Shortly after arriving here and before opening an office, I was called to see a lady living next door to my residence. It seemed to be an open and shut case of pneumonia and the family was so advised. Finding the case to be more serious than they first thought, the family decided they wanted a consultation and asked for one of the old timers in Phoenix. I

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gladly consented and awaited my first contact with the local medical profession with pleasurable anticipation, which was soon rudely shattered. The older doctor came, made his examination and then sat down in the presence of the patient, the anxious family and me,-and gave his consultation opinion somewhat as follows:-"Dr. Watkins is a young doctor and doubtless is doing his best, according to the extent of his experience. However, after he has been in practice as long as I have, he will not mistake a case of typhoid fever for pneumonia. This lady has typhoid fever and should be so treated. If you want me for anything else, you know where to find me." Of course, the family very quickly were asking me to give up the case and allow the patient to be put in charge of this consultant. There was nothing else to do, but it was interesting that this case of typhoid fever, mistakenly diagnosed pneumonia by me, terminated by crisis inside of a week. Great was the skill of this doctor, in the eyes of the family! He could even shorten the slow lysis of typhoid fever into a crisis, very much resembling that of lobar pneumonia! He was on par with the doctor who, when confronted with a condition outside of his limited knowledge, would give the patient a drug to bring on convulsions,-because he was "hell on fits." Consultation technic has undergone considerable refinement in recent years. The crude procedure followed by the doctor in my first consultation experience came to be exceptional, and the grabbing of a case by a consultant came to be looked on as unethical. Years passed and specialization began to be popular in Phoenix. The consultants found themselves very much in demand as consultants and they finally saw the reason for this; at the first show of interest in a specialist by a patient, the doctor in charge would call the specialist in consultation, and that would stop him from taking the case as a private patient. This came to be so much the rule that the specialists went into a huddle and pushed through a resolution in the county medical society, removing the ethical prohibition against a consultant accepting the patient as a private case, after being in consultation on him. So, we went through another cycle until the rank and file of the medical practitioners suddenly realized what was being done to them, and they rose in righteous indignation and repealed this resolution. However, so far as I have observed, with this resolution in effect, or after its repeal,

the practice of medicine has followed the individualistic ideas of the practitioners.

4. Advertising. This is the longest section in this Chapter, too long to quote and its ramifications are too many to discuss in the limited time available. A special paper could be devoted to this on some other occasion. I will quote only one sentence:—

"The most worthy and effective advertisement possible, even for a young physician, and especially with his brother practitioners, is the establishment of a well-merited reputation for professional ability and fidelity."

Some years ago, a doctor whom I had known for a long time, was thinking of moving from a distant city to Phoenix. He inquired of me which of three specialties offered the best prospects here,-physiotherapy, eye-ear-nose-throat, or obstetrics. The first thought was that he planned to start a clinic, but he stated that he was trying to select a specialty for his individual practice. Knowing him to be a general practitioner of mediocre ability, I then inquired where and when he had taken the special training which would entitle him to offer his services in any of these specialties. He said he had never had any special training but thought he could "get by" in any one of these. When he finally did locate in Phoenix, he announced himself as a specialist in industrial surgery,-still without any special training. This entering a specialty by proclamation, rather than by preparation, is a good text for a sermon on this whole matter of advertising. However we do not need to preach the sermon; it preaches itself.

5. Fee Splitting. Fee splitting or giving rebates to other doctors for referred work is regarded as unethical. The term "fee splitting" is a shibboleth which is used about as freely and carelessly as the word "Communism." When we do not like a man's attitude on a public question, it is very easy to say he is a Commist, or to say that a course of action with which we disagree, is Communism. We talk about fee splitting about as carelessly. About 25 years ago, when the staff was being organized at St. Joseph's Hospital and recognition by the College of Surgeons was sought, the question of fee splitting became important. To settle some of the questions raised, I, as secretary of the staff, submitted a lengthy inquiry to the College, outlining five hypothetical situations which were common practices in Phoenix. The College made reply,

the gist of which was that three of the situations outlined would be regarded by the College as fee splitting and that the other two would not. One of these latter two, not regarded by the College as fee splitting, was the collection by the hospital of fees for x-ray work or laboratory work, and the division of these fees with the radiologist or pathologist, on a percentage basis. The other practice which was considered by the College not to be fee splitting, was the financial arrangement which our Laboratory had with some doctors regarding payments for work done for those doctors. The College further stated the basis on which the question of fee splitting should be decided; this is,-whether any injustice is done to the patient. An investigation of the practices in Phoenix was also made a few years later by the Council on Medical Education and Hospitals of the A.M.A., when our hospitals applied for certification for intern training. Dr. Colwell, then Secretary of the Council, visited Phoenix, made his investigations in person, and arrived at the same conclusions as the College of Surgeons.

Some interesting situations have been observed in Phoenix in connection with fee splitting, in bygone years. One of the most interesting reactions to this question of fee splitting was that of one of the best known and highly respected surgeons of Phoenix, now deceased. When the College of Surgeons was organized, no one questioned his eligibility for affiliation. However, he refused to make application, frankly stating that he would not take the pledge to refrain from fee splitting. He said his practice had been built on fee splitting, that he believed in it and would continue to practice it. Every doctor in Arizona knew where he stood in this matter and we respected him for his honesty, while we looked askance at some who were strong in pledging and weak in practicing,-as Fellows of the College. This physician was never denied staff membership by the Phoenix hospitals, but I think they drew a sigh of relief when he announced his retirement from practice.

Another practice which was very common when I arrived in Phoenix in 1907 was the astute arrangement which several of our doctors had with the morticians,—called undertakers in those days. Many patients with last stage tuberculosis were arriving in Phoenix, lingering a few months and then dying. A common practice was for the doctor to select the undertaker and turn over to

him the bill for professional services. The undertaker would notify the relatives in the east that the body was being held until all bills were paid, -including those of the doctor. This might delay shipment of the body for weeks, but finally the money would come through and the doctor would receive payment of his bill. Before I learned about this system, I had a patient who died. I did not select the undertaker, but he called me and asked for my bill. It happened that the patient had paid me for each visit, so I had no bill, and so informed the undertaker. Much to my surprise, in a few days I received a check for \$25.00 and a note of appreciation from the undertaker. I hear some one asking,-"Did you keep the \$25.00?" In reply to that, I call your attention to a clause in Section 4, of this Chapter on ethics, where advice is given to young doctors on establishing a practice in a new locality. This clause reads,-"It is unprofessional to disregard local customs." Being keenly desirous of establishing an entente cordiale with the medical profession of Phoenix, I thought it best to conform to the local custom in this particular instance.

In another case, it seemed that this competition among the undertakers went a little too far. Once a patient of mine in the hospital was evidently nearing the end, and I was impressed with the solicitude of one of the hospital attendants over how long he would live. I rather carelessly said I thought he was breathing his last right at the moment. Later, I learned that an undertaker was almost immediately called, and the men with the basket had to wait at the hospital about an hour, until the patient quit breathing. Some years ago, it was the practice of some of our morticians to send to the wives of their favorite doctors nice boxes of candy each Christmas. How would you classify that gentle courtesy, and what would you do about it, except demand your share of the candy?

6. Secret Remedies. Just while I was reading this section and concluding there was nothing to be said about this unethical practice, so far as our community is concerned, a visitor managed to get into my office on the pretext of knowing a relative of mine. The relative excuse was quickly disposed of, and the man then spent an hour trying to develop some interest in me over a project he had in mind. He manufactures remedies which he says are used extensively by the medical practitioners around Chicago.

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Among these is the "best thing yet discovered" for arthritis, the nature and contents of which he would not divulge. His idea is to start a "clinic" in Phoenix which will treat arthritis and feature this remedy which he proposes to supply. Not striking any fire in me, he left with the statement that he knows doctors in Tucson who will cooperate, and after he gets the clinic started in Tucson, he plans to return to Phoenix and establish one here,-if he can find some doctors who are wearing out the seats of their pants doing nothing. Reminds me of the remark once made by Dr. Willard Smith, when some heated discussion was going on in the County Society over the dereliction of a local doctor. The discussion was brought to an abrupt end when some one asked,-"Why in H--l would a doctor do such a thing?" Dr. Smith removed his pipe long enough to reply,-"Maybe the man was hungry." Also reminds me of another sage remark, -author unknown. Some one in trying to excuse some shady transaction said, "A person has to live.' A far-seeing and wiser man replied,-"No, a person does *not* have to live; but he does have to give account for the way he lives."

7. Safeguarding the Profession. This is the last and hardest ethical requirement. The section reads:

"Physicians should expose without fear or favor, before the proper medical or legal tribunals, corrupt or dishonest conduct of members of the profession. All questions affecting the professional reputation or standing of a member of the medical profession should be considered only before medical tribunals in executive session.'

This is quite an order and sounds like a sentence from a campaign speech. When I opened an office in Phoenix in 1907, one of the local practitioners came around and bade me welcome and said he would like to help me get started, and would like for me to give anesthetics for him. He called me for this service four or five times in rapid succession,—once at his office, and the other times at private residences or rooming houses,-always curettments. Then, Dr. Plath, whose office adjoined mine and with whom I was later to be associated, warned me against this doctor and told me what I was already suspecting,-that these curettments were illegal abortions. So that brief relationship with corrupt practice ceased,-and I was never able to collect for any of those anesthetics. In those

days, the attitude of the local practitioners was one of welcome to an abortionist practicing openly in their midst, because they had a place to refer patients who insisted on such a service. However, this man went beyond all ethical bounds, even for an abortionist. He had a bedroom adjacent to his office and took revolting pleasure in boasting that his custom was to require good looking women to spend the night with him in this room before having the operation the following morning. This doctor probably had his own ethical standards, and did not like to perform a curettment for a pregnancy, until he had made certain the woman was preg-

Some years later, another doctor located in Phoenix and developed an amazing flair for abortions, building up an extensive and lucrative practice in that specialty,-while maintaining membership in the county medical society. For a long time, no one was willing to assume the onus of accusing him before the proper medical tribunal, as the Principles of Medical Ethics calls However, this man finally went too far, seduced his office secretary, and when she demanded some financial redress, he blacked both her eyes and then left town for a prolonged vacation. That was a little too much; criminal abortions and seductions we could overlook, but a doctor has no right to beat up his office nurse or secretary, when she tries to preserve her chastity, or to make him pay for the loss of it. So, this doctor was finally tried in absentia before the proper medical tribunal and suspended from society membership for one year!

I would like to reverse the picture and say just a few words on safeguarding the profession by avoiding criticism of other practitioners. I take it that this section means that if you have any question regarding the professional ability of a doctor who has treated a patient who later comes into your hands, or if you think the treatment was unskillful or even negligent,-it is wholly unethical for you to express this opinion to patient, his relatives, or his friends. You can bring it before some medical tribunal, if your tender conscience will not let you preserve the discreet silence which the Golden Rule calls for. Such expressions as, "How in the world did your doctor let your broken arm get in this shape?" "Why didn't your doctor do this or that, and keep you out of this mess?" "That is a terrible x-ray burn; how did you get it?" "Why didn't

your doctor give you penicillin; it was the proper treatment?"

Anything which you do or say to plant a doubt in the mind of a patient as to the appropriateness of former treatment, or the skill or care of a former doctor on the case, is just digging a pit into which you may yourself fall. It is undermining the confidence which an individual has in the medical profession as a whole, and that lack of confidence will come home to you, and to all of us.

In closing, I would like to repeat the opening sentence in the first section of Chapter III. "The obligation assumed on entering the profession requires the physician to comport himself as a gentleman.' *Period*.

# BASIC Science SEMINAR

## FLUID AND ELECTROLYTE BALANCE

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#### WATER AND ELECTROLYTE BALANCE

The exact knowledge of the fluid and electrolyte balance in the body is essential for the correct management of any kind of patient and especially the surgical patient. Its deficiencies may result in serious complications or may actually lead to death. There is an intimate relationship between the water and electrolyte balance; however, a proper water balance does not insure adequate electrolyte balance (1).

# I-TOTAL BODY WATER

In the first place it is very important to know the normal distribution of water and electrolytes and the size of the fluid compartments.

Three methods have been employed for the measurement of total body water, (2); 1) Desiccation, 2) Body Specific Gravity and 3) Dilution techniques.

The values reported with the desiccation technique are summarized in table number I.

TABLE 1

Reference	Age, years	Sex	Total body water per cent body weight
Bischoff	Newborn		66.4
Fehling	Newborn		74.1
Iob and Swanson	Newborn		75.5
Widdowson et al.	Newborn		68.8
Camerer et al.	Newborns		69.2-73.0 (6 infants)
Widdowson et al.	4.5	M.	53.8
Volkman	Adult	M.	65.7
Mitchell et al.	35	M.	67.9°
Bischoff	33	M.	58.5
Widdowson et al.	25, 42, 48	M.F.M	.61.8, 56.0, 81.5°
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Table 1: From Edelman, I. S. and Col.: Surg. Gyn. & Obst. 1952, 95.1.

Obviously this first method has no clinical application.

Behnke(2) in 1941 reported his studies dealing with specific gravity measurements in young men. He showed that in normal subjects the determination of body specific gravity enabled one to estimate the body fat content. He conceived of the body as consisting of a fat-free portion of essentially constant gross composition and a variable quantity of fat. Behnke formullated his now widely accepted concept of the lean body mass. He proposed on a theoretical basis ,that body water and body fat must bear an inverse relationship to each other.

However, Edelman and co-workers(3), say that the measurement of speific gravity in the human subject is a difficult laboratory procedure which at the present time seems far from practical for clinical application, and the fat content is difficult to measure by any direct means, although complicated indirect measurements have been made.

In relation to the dilution method, several substances have been used: potassium, thiourea, sulfanilamide, tritium (the radioactive isotope of hydrogen, mass 3), antipyrine and deuterium oxide (heavy water). Of all, the last two seem to be better.

Antipyrine was first introduced for this purpose by Soberman and his associates in 1949(2), they found similar values for the body water obtained with antipyrine and with deuteriun oxide. Values are from 43% to 58%. Messinger, Steele, Osserman and co-workers found satisfactory correlation of values for body water obtained with the use of antipyrine with those obtained from specific gravity measurements. They

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However, antipyrine equilibrates slowly with abnormal fluid deposits such as ascitic fluid, is selectively bound by protein and is metabolized at a rate which varies between subjects. Deuterium oxide, according to Hardy and Drabkin(2) was used for the first time by von Hevesy

and Hofer in 1934. Moore introduced its use in the United States in 1946.

Several reports have appeared since then. Hardy and Drabkin(2) reported their results in a group of healthy adult male and female human subjects, ranging in size from very lean to very obese. The leanest male had a total body water value of 71% of body weight (44.5 liters), and the most obese man had 42% (48.3 liters). The leanest female had 68% and the most obese 50%. However the most obese female subject was not clinically as obese as the most obese male subject. The average value for body water for eight healthy men was 60% of body weight and 55% in females.

Schloerb and his associates (2) using deuterium oxide reported an average value of 61.8% for body water in healthy young adult men and 51.9% in healthy young adult women. They found the total body water to be more closely correlated with surface area and oxigen consumption than with the other physical indexes examined. Schloerb and associates cited by Randall(4) found an average of 23.6 liters per square meter in males, and 18.3 liters per square meter in females, each with a coefficient of variation of 4.4 per cent.

Friis-Hansen and associates in 1951(5) reported their observation in 24 children and in 20 instances determinations were made by both the deuterium oxide and antipyrine methods. Values between 70.2 and 83% body-weight were found in the neonatal period. The premature infants fell into the same range as the full term infants. During the first six months of life there was some decline in body water. Beyond 6 months of age the values varied between 53 and 63% and showed no correlation to age or sex.

Edelman and associates in 1952(3) reported their results of total body water measurements in normal human subjects. One hundred and twenty determinations were made covering an age range of 2 days to 86 years and a weight range of 2.3 to 100.3 kilograms.

In newborn infants under 1 month of age,

values were from 71.8% to 83.0% of body weight with an average of 76.7%. In infants from 1 to 12 months of age values are from 53.0% to 70.8% and a average of 62.6%.

In children 1 to 9 years of age values are from 55.2% to 62.8% and average 58.9 per cent of body weight. In adolescent males from 10 to 16 years of age values are 51.8% to 63.2%, and average 59%. In females values were from 49.8% to 59.5% with an average of 56.2 per cent of body weight.

In adults males from 17 to 34 years of age values are from 53.3% to 70.3% and average 61.1 per cent of body weight. In females (20 to 31 years of age) the values are 45.6% to 59.9% with an average of 51.2 per cent of body weight. In adults males 35 to 54 years of age values were from 44.7% to 64.1% and average 55.4%, and in females 40.5% to 54.3%, with an average of 48.2 per cent of body weight. Adults over 54 years of age, in males values were from 47.8% to 62.8% with an average of 54.3% and in females, from 42.0 to 53.4, an average of 46.2 per cent of body weight.

Before 16 years of age, no appreciable sexual difference in body water content is noted. In the young adult a clear-cut sex difference becomes apparent. The male exhibits approximately 17 per cent more body water. This sex difference persists for the remaining adult years. Both males and females show a fall in relative water content during the middle years of life and older males and females show a slight further decrease in total body water with advancing age.

## II.-FLUID COMPARTMENTS

It is classical to divide the body fluids into two major spaces: Extracellular and Intracellular. The extracellular fluid is further divisible into Intravascular (plasma) and Extravascular (intestitial) fluid.

Levitt and Gaudino in 1950(6) presented a very interesting article. They reviewed the substances used for the Extracellular space measurements such as: sodium and cloride concentration, radioactive cloride and sodium, bromide, sodium thiocyanate, sulfate, sucrose, mannitol and inulin.

The size of the extracellular space depends on the method used. For instance, Kalterider using radioactive sodium showed a sodium space of 24.8% of body weight at 3 hours, in the adult. Flexner, however, in newborn infants with the

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same substance obtained 43 per cent of body weight. Crandall and associates with thiocyanate obtained values in males of 24.2% of body weight (4).

Walser(7) in 10 normal subjects and using radiosulfate (S-35), obtained an average sulfate space of 16.3%.

Schwartz cited by Randall(4) found in 7 normal adults males an inulin extracellular fluid space of 14 to 18 per cent of body weight, an average of 16.2%. Simultaneous sodium spaces averaged 26.7 per cent and thiocyanate space 25.9 per cent in some of the same group.

Levitt and Gaudino(6) with inulin found an average of 19.4 per cent of body weight in the dog and 16 per cent in the human, and they concluded that inulin represents the best measure of extracellular fluid available.

Plasma volume seems to be more closely correlated with total body water than with body weight. Schloerb cited by Hardy and Drabkin (2) reported their results in a group of healthy adult men of widely different degrees of obesity. Plasma volume ranged from 2.75% (in th very fat) to 5.65% (in the very lean) of body weight an average deviation of 22%. Expressed as a percentage of total body water, however, plasma volume ranged from 6.2% in the most obese to 7.8% in the leanest with a mean of 6.96% and an average deviation of 7%.

The Intracellular fluid by difference is 30 to 45 per cent of body weight.

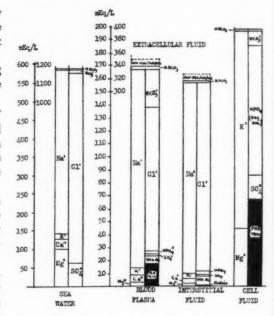
# III-CHEMICAL ANATOMY OF THE BODY FLUIDS

There are big differences in the chemical composition between extracellular and intracellular fluids. We can appreciate this in the classical columns drawn by Gamble(8).

Sodium and cloride ions, are predominant in Extracellular fluid, while in Intracellular fluid they are absent. Here potasium and phosfate ions are the principal ions with a high content of proteins.

Electrolytes of the		Electrolytes of Int. lar fluid.	racellu-
Cations (base +) !	M.Eq./L.	Cations M.	Eq./L
Sodium	142	Potasium	140
Potasium	5	Magnesium	45
Calcium	5	Sodium (variable)	10
Magnesium	3 155		195
Interstitial fluid almost no protein	contains is.		

Diagram from: Gamble, J. L.: Chemical Anat-



omy, Physiology and Pathology of Extracellular Fluid. Harvard University Press. Cambridge, Mass. 1947.

Anions (acid -)	M.Eq./L.	Anions	M.Eq./L
HCO3	28	HCO3	10
Chloride	103	Organic Acid	
Orangic Acid	s 6	PO4	100
Phosfate	1	Sulfate	20
Sulfate	1	Protein	65
Protein	. 16		
	155		195

It is obvious that the maintenence of body water and electrolyte balance demands that the intake equal the output.

The kidneys play the chief role in the control of the volume and concentration of body fluids. However the renal regulation is merely the crucial activity in a complex process integrated by the regulation of the cardiovascular system, the neurophyophysis, the humoral and neural control of the blood pressure and capillary bed and the adrenal and other endocrine glands(9). The importance of the protein should be emphasized. It is by virtue of the osmotic pressure exerted by these colloid substances against the capillary blood pressure that escape of fluid from the capillaries into the surrounding tissues is prevented(10).

#### **IV-WATER LOSS**

Normally the body loses water in three ways: 1) the lungs and skin, 2) the kidneys, and 3) the gastrointestinal tract. SO'A

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The elimination of water by the route of lungs and skin is in relation to the environmental temperature and humidity. Heat normally is dissipated by vaporization from the skin and lungs, and by radiation, conduction and convection from the body surface. Water so vaporized, in the absence of visible sweating, is called insensible water loss. In the normal person the insensible water loss amounts to from 1000 cc to 1500 cc daily. Water loss from the lungs is not accompanied by loss of electrolytes. The rate of water loss from the respiratory tract depends on the volume of respiratory exchange and the content of water of the inhaled and exhaled air. These are in turn dependent on the temperature and humidity of the environmental air. The insensible loss of water from the skin is dependent chiefly on a gradient for diffusion through the skin. This is dependent chiefly on skin temperature if the surface is dry. A small amount of electrolyte is lost from the skin when there is no sweat, presumably through desquamation, though there may be minimal activity of sweat glands, as well. The insensible water loss, excluding sweat, is roughly correlated with heat production, so that 42 Gm. are lost for each 100 calories produced. The quantity of electrolyte in sweat has been found to be so variable that any prediction of the composition is difficult and unrealiable. clinical purposes the concentration of sodium and chloride may be assumed to be 25 to 50 millimoles per liter and that of potassium, 15 millimoles. The concentration of sodium, potassium and chloride in sweat are influenced by adrenocortical hormones (11).

The concentration of the urine determines the volume of water excreted by the kidneys and is dependent on the renal load, the water intake and the ability of the kidney to form either a concentrated or dilute urine. Lashmet cited by Mason and Zintel(10) consider 500 cc. as the minimal amount of urine sufficient to eliminate the average of waste products (30 to 40 Gm.). Healthy kidney is capable of concentrating urine to a specific gravity of 1.032. In disease the concentrating power of the kidney is reduced and as much as 1500 cc. of urine may be required to eliminate the waste products. Coller and Maddock consider 1000 cc. daily a satisfactory urinary output for the majority of surgical patients.

The amount of water excreted into the gastrointestinal tract as saliva, gastric juice, etc., is enormous. Gamble found it to be about 8,200 cc. This amount being composed of 1500 cc. saliva, 2500 cc. gastric secretions, 500 cc. bile, 700 cc. panreatic juice and 300 cc. secretions of intestinal mucosa. However, most of this water is reabsorbed in the ileum and proximal colon, and fecal material contains but about 150 cc.

Besides this "Physiological" water, there are losses called "Pathological" or "Abnormal," such as in diarrhea, vomiting, suction drainage from stomach or intestines, gastric, duodenal or biliary fistulas, etc. The amount may reach 1000 to 4000 cc. or more in 24 hours.

The characteristics of the electrolytes losses of the gastro-intestinal tract have been the subject of much study.

Studies of Randall and collaborators (4) showed that the average gastro-intestinal tract drainage is not isotonic (as before believed), but is hypotonic insofar as sodium and chloride are concerned. The marked differences in types of electrolytes lost depends upon the location of the drainage point within the gastrointestinal tract.

Beside these three main routes, the body can lose water and electrolytes through large open wounds. Moore and his associates (12) in a study about the exudate of burned patients found that the exudate sodium may comprise 95 per cent (or more) of all sodium lost and an average of 45 per cent, with concomitant urinary sodium loses reduced virtually to zero. Chloride balances resembles that of sodium but this urinary loss may be higher and exudate loss lower. Potassium loss is 20 per cent or less of all the potassium lost from body and in 1 patient (who died) exudate potassium comprised 30 and 45 per cent of the potassium lost from the body in the two periods measured.

In the first few days following an abdominalperineal resection the packing placed in the perineal wound is saturated with material which is quite similar to plasma in its composition and 500 cc. or more of this material may be lost per day.

Water and electrolytes may be lost to the circulation and extracellular fluid space without actually leaving the body itsef, such as in burns, trauma or infection. Since the composition of this third space fluid is essentially that of extracellular fluid and since it results in internal dehydration the replacement which is required is in

## GASTROINTESTINAL TRACT LOSSES, MILLIEQUIVALENTS PER LITER

	Na.	K.	Cl.
Gastric.	Average 59.0	9.3	89.0
Fasting	Range 6.0-158	0.5 - 65.0	13.2-167.2
130 specimens	2/3 cases 31.0-90.0	4.3-12.0	52-124
Small Bowel	Average104.9	5.1	98.9
(Miller-Abbott suction	Range 20.1-157.0	1.0-11.0	43.0-156.1
89 specimens	2/3 cases 72-128	3.5-6.8	6927
Ileum	Average116.7	5.0	105.0
Miller-Abbott suction	Range 82-147	2.3-8.0	60.7-137
17 speciments (7 patients)	2/3 cases 91-140	3.0-7.5	82-125
Ileostomy	Average129.5	16.2	109.7
(Recent)	Range 92-146	3.8-98.0	66-136
25 speciments	2/3 cases112-142	4.5-140	93-122
Cecostomy	Average 79.6	20.6	48.2
20 speciments	Range 43-135	3.7-47.3	18-88.5
9 patients	2/3 cases 48-116	11.1-28.3	35-70
From biliary tract and from pan	creatic fistulas:		
Bile	Average 145.3	5.2	99.9
22 specimens	Range122-164	3.2-9.7	77-127
12 patients	2/3 cases134-156	3.9-6.3	83-110
Pancreas	Average141.1	4.6	76.6
3 patients	Range113-153	2.6-7.4	54.1-95.2

Tables from: Randall, T. H. Water and Electrolyte Balance in Surgery. Surg. Clin. North-America 32:445-469, 1952.

terms of the composition of extracellular fluid and frequently, if protein loss is high, of plasma.

# DISORDERS OF ELECTROLYTE METABOLISM

Gastineau(13) divides the disorders of electrolyte metabolism in two large groups. The first are those of water balance, and second those characterized by changes in the hydrogen-ion concentration (Disturbances of acid-base balance).

Disturbances of acid-base balance will not be treated, and only a few words will be mentioned. When the disturbance decreases the pH, it is called Acidosis, whereas if the pH increases, it is called Alkalosis. When there is a disturbance of acid-base balance resulting from changes in pulmonary ventilation, it is spoken of as Respiratory acidosis or Alkalosis, whereas if the primary disturbance is a matter of loss of body fluids, administration of acid or alkaline substances or alterations in renal function, it is considered to be Metabolic Acidosis or Alkalosis.

Disturbances in water balance can be divided into A) Dehydration (extracellular fluid volume decreased), and B) Overhydration (extracellular fluid volume increased). There are two varieties of dehydration: 1) water deprivation and 2)

Electrolyte loss; and two varieties of overhydration by 1) retention of electrolytes and 2) water intoxication.

Dehydration by water deprivation gives hypertonic extracellular fluid. Symptoms are: thirst, fever, dry skin, dry tongue, restlessness, full pulse, normal blood pressure and scanty concentrated urine.

Dehydration by loss of electrolytes is characterized by weakness, pallor, low blood pressure, absence of thirst and dilute urine, which may be normal in volume. If blood pressure has fallen sufficiently low, however, there may be oliguria or anuria. This syndrome is observed in: diabetic acidosis, Addisonian crisis, heat exhaustion, diarrhea, vomiting and gastrointestinal fisula. Many of the symptoms of this state can be explained by the circulatory failure.

However dehydration very often is the result of both deprivations, and is called "mixed" dehydration.

Overhydration caused by ingestion of very large amounts of water is called "water intoxication." Here we have hypotonicity and this hypotonicity appears to cause certain shifts in intracellular hydration which produce a definite set of symptoms. In milder degrees: nervousness,

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salivation and vomiting. In more severe cases: disorientation, stupor, irregular twitching, movements of the extremities and finally convulsions may occur. Hypertonic solution of sodium chloride is effective in correcting this condition.

Overhydration as result of retention of sodium, is caracterized by large volume of extracellular fluid and normal or increased concentration of sodium. Edema is a frequent symptom. This symdrome is seen in heart failure, nephritis, and when excessive amounts of solution of sodium chloride have been administered.

In practice mixed disturbances often are seen. Early sodium chloride deficiency is characterized by: weakness, apprehension and generalized feeling of discomfort, and abnormal thirst is also frequently present. When the deficiency becomes more severe early symptoms of vascular shock develop. The skin becomes pale, cold and sweaty, and blood pressure begins to drop. Tachycardia, and diffuse abdominal distress are fairly constant findings. Severe hiccouphs, and soon shock develops, and mild irrationality or delirium appears. Coma can be present, temperature becomes subnormal, urinary output decreases sharply, and the non protein nitrogen rises. The reduction in serum sodium concentration results in a tendecy toward acidosis because less sodium is available for combination with bicarbonate. Serum bicarbonate then becomes reduced.

Symptoms of potassium deficiency in the early stage are quite inconstant. As the deficiency increases, the more constant symptoms are: weakness, apprehension and a feeling of generalized discomfort. Anorexia is common but nausea and vomiting less than in sodium chloride deficiency. Insomnia, alkalosis and an increase in the non-protein nitroge content of blood is quite com-

mon; periodic paralysis has been reported. A serum potassium level of 3.5 mEq. or less per liter is indicative of potassium deficiency of sufficient degree. The electrocardiographic changes are very important in confirming potassium deficiency; decreased amplitude or inversion of the T waves and a lengthening of the Q-T intervals. An excellent description of the symptoms in deficiencies of electrolyte balance is given by Moyer in his book(14).

### FLUID AND ELECTROLYTES REQUIREMENTS

In accordance with our previous knowledge about the "physiological" and "pathological" or "abnormal" losses of water and electrolytes, the adequate replacement will vary with each particular case.

Attention must be given to several factors: age, sex, weight, fat content, climate (heat, humidity), vomiting, fever, diarrhea, operative procedures (pre, during, and post-operative), suction by gastroduedenal tubes (Levine, MillerAbbott, etc.), biliary drainage, etc., etc.

All these factors make it impossible to assign any particular amount of water or electrolytes for general corrective treatment.

Roughly, for an uncomplicated surgical case 2000 to 2500 cc. of water must be given and in complicated cases 3000 to 3500 are necessary (Coller and Maddock cited by Mason and Zintel(10)). Here the output is extremely important. The abnormal losses should be calculated and the quantity excreted should be replaced by an equal quantity of proper solution.

Low levels of electrolytes in plasma require replacement. Serum sodium is seriously low in most surgical patients if it is below 125 mEq.

THE ELECTROLYTE CONTENT OF 1 LITER OF INFUSION FLUID (mEq.)

Na.	K.	Cl.	Effective HCO2
Sodium chloride 0.9%	0	154	0
M/6 sodium lactate	0	0	167
Sodium bicarbonate 1.2%	0	0	143
Ammonium chloride 0.75% 0	0	140	0
Dextrose in water 0	0	0	0
Potassium chloride ampules (1.59 gm.) in 10 cc 0 Special Solutions:	20	20	0
Hartman's solution •	5.3	112	33
Darrow's solution	35	105	50
Sodium chloride-potassium chloride (Mudge)110	30	140	0
Potassium chloride (2.23 gm.) 5% dextrose in water 0 *Ca3.6 mEq.	30	30	0

Table from: Randall, T. H. Water and Electrolyte Balance in Surgery. 32, 445-469, 1952.

per liter and shock is likely at levels below 120 mEq. per liter. Much depends on the rate of fall. Serum chloride requires replacement in most surgical patients when the level falls to 85 mEq. per liter, and bicarbonate when it is below 15 mEq. per liter (33 volumes per cent), while potassium levels below 3.4 mEq. per liter are suspected and below 3.0 mEq. require replacement. Flame photometers for the direct measurement of sodium and potassium concentration in biological fluids have proven to be most valuable.

The selection of the proper parenteral fluid or combination is very important. The following table gives the composition of various types of fluids commonly used.

It should be remembered that parenteral replacement is always a temporary and inadequate substitute for the gastrointestinal tract, and oral intake should be resumed as soon as returning function permits, supplementing parenterally until oral intake is adequate in water, electrolytes and calories (4):

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#### PHOENIX CLINICAL CLUB CASE RECORD NO. 15

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

A seventy-two-year-old Finnish-born, married steel worker entered the hospital with a chief complaint of "severe" shortness of breath.

Two years before entry the patient was told that he had an "irregular" heart but successfully discharged his duties as a steel worker until eleven months before entry, when he tripped and fell 20 feet while on the job and injured the left seventh, eighth and ninth ribs anteriorly and his left hand. Radiograms of the chest were reported as not remarkable except for the rib fractures. After spending twelve days in two other hospitals he returned home but not to his job. The patient dated the beginning of his dyspnea as shortly after this accident. About nine months before entry vague precordial pain, described by the patient as 'constriction' and

"congestion," appeared especially after exertion but frequently at night. This discomfort lasted usually about five minutes but occasionally much longer and did not always disappear with rest. No radiation of pain to the shoulders or arms was ever present. The dyspnea temporarily improved three and a half months before entry so that he was content to take care of his flocks of turkeys and do other small jobs. However, his dyspnea recurred in the next month, and he was denied even these minor pleasures, being unable to walk short distances without excessive fatigue. A slight cough productive of small amounts of whitish sputum appeared. About five weeks before entry he developed hay fever (which he had experienced in the past) and noted more difficulty sleeping at night, requiring two pillows to sleep comfortably. One month before entry he noted an increase in his anorexia, which he believed had been present since his accident. He further noted a weight loss of about 20 pounds in the last five or six months.

He visited the Medical Clinic of the Out Patient Department one month before admission, and an additional history was obtained of exposure to tuberculosis; a daughter had had the disease several years previously and a sister-in-law , 1953

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was similarly afflicted thirty years before. Examination at this time revealed a blood pressure of 150 systolic, 90 diastolic, a pulse rate of 80, with 8 to 10 skipped beats at the wrist per minute, and a Grade II apical systolic murmur and auricular fibrillation; no definite cardiac enlargement was noted. The temperature was 97°F., and the respiratory rate 20. The lungs were resonant, and basilar rales cleared on coughing. A firm, nontender right supraclavicular node (1.5 cm. in diameter) was noted. Abdominal and rectal examinations were not remarkable. Hinton test was negative. Radiograms of the chest revealed an enlarged heart with a cardiothoracic ratio of 18:25, the enlargement appearing predominantly in the region of the left ventricle. The lung fields exhibited extensive, diffuse, linear and mottled densities, particularly in the middle and lower portions. The hilar vascular shadows were poorly seen but appeared somewhat enlarged. The patient was digitalized and given nitroglycerin. Urinalysis was ne-

Two weeks before entry he was again seen in the Medical Clinic, at which time his blood pressure was 130 systolic, 80 diastolic, and the pulse and breath sounds were essentially unchanged. Very shortly thereafter the dyspnea rapidly increased, three or four pillows being required at night. Five days preceding entry the dyspnea became so severe that virtually no sleep was obtainable, the patient having to sit in a chair or upright in bed to facilitate easy breathing. The next day he developed ankle edema, which gradually increased.

Physical examination on admission revealed a well-developed, well nourished, somewhat apprehensive but co-operative man with extraordinary dyspnea, coughing frequently and usually swallowing the sputum. Cyanosis of the lips, fingers and mucous membrances was present. Bilateral distention of the neck veins, slightly more marked on the left, was evident in the upright position. A few small, hard nodes were present in each supraclavicular region. chest was moderately emphysematous, and dullness was present on the right posteriorly and in the axilla to the angle of the scapula, with decreased breath and spoken voice sounds; dry rales were present in the right chest above the area of dullness, but no rales were noted on the left. The notable cardiac signs were a maximal impulse of the heart 11 cm. to the left of the

midsternal line in the lower fifth interspace, auricular fibrillation with a 10-beat pulse deficit, some occasional bigeminy, and a short apical systolic murmur. Moderate ankle and slight to moderate sacral edema was present.

The temperature was 97°F., the pulse 80, and the respirations 32. The blood pressure was 135 systolic, 90 diastolic.

Investigative studies revealed a circulation time (Decholin) of 50 seconds, a venous pressure equivalent to 222 mm. of water and a vital capacity of 900 cc. Examination of the blood disclosed a red-cell count of 5,100,000, with a hemoglobin of 14.5 gm., and a white-cell count of 9550, with 80 per cent neutrophils. The prothrombin time was 19 seconds (normal, 15 seconds). The nonprotein nitrogen was 28 mg., the blood sugar 96 mg., and the total protein 5.9 gm., per 100 cc., and the sodium 127.8 milliequiv., the chloride 92 milliequiv. and the carbon dioxide 22.7 milliequiv. per liter; the alkaline phosphatase was 4.6 units per 100 cc. phenolsulfonephthalein test showed 62 per cent excretion of the dye, and the bromsulfalein test 64 per cent retention of the dye. The gastric acidity was in the normal range. Sputum smears were negative for acid-fast organisms and abnormal cells. Two separate gastric washings were positive for tumor cells and gave a plus four guaiac reaction. The stools were consistently guaiac positive. Urinalysis was not remarkable; the urinary sodium chloride was 1 or 2 gm. per 24 hours. An electrocardiogram revealed auricular frillation, low voltage, sagging ST segments in Lead 1 and 2 and AVL and V. and inverted T waves in Lead 1 and 2 and AVL and V4 and V6.

Radiographic studies demonstrated very little change in the chest since the previous examination. A roentgenogram of the abdomen was marred by the dyspnea, the only discernible visceral outline being that of the liver, which was at the upper limits of normal; some air was present in the large bowel, and little or none in the small bowel. A gastrointestinal series was attempted but was incomplete and unsatisfactory because of the patient's extreme illness; however, the midportion of the posterior wall of the stomach appeared to be rather straight, and the duodenal bulb was deformed. X-ray films of the bones were normal.

The patient was placed on a cardiac regime, including digitoxin, ammonium chloride, Sod-

ium Amytal, Mercuhydrin, a diet moderately low in sodium, and other supportive therapy. Despite these measures he continued to be critically ill and died on the sixth hospital day.

#### DISCUSSION BY DR. KENT THAYER

This 72 year old man apparently died in congestive failure. The cause of this congestion could be from any of several different causes.

Evidently this man was getting along quite well until he had his fall about eleven months before he entered the hospital. At that time he fractured two or three ribs on the left. Whether he had myocardial injury from the trauma we do not know, for nothing is stated about this. It is known that a blow or a rib injury resulting in compression of the heart, or even cardiac puncture from a broken rib, can occur. The amount of cardiac disfunction that follows depends on the degree of injury and the extensiveness of the injury. Electrocardiograms may reveal changes of an anterior myocardio infarction, or, if the injury is over a small area without involving a coronary vessel, the electrocardiogram may show only a small amount of change.

Since the tracing was taken nearly eleven months later, it is hard to interpret this as primary cardiac trauma. Evidently this man had a progressively increasing size of his heart, and along with this was a progressive dyspnea. The blood pressure readings that this patient had are somewhat against constrictive type of pericarditis and the grade two apical systolic murmur would fit with cardiac dilatation.

The physical findings of his chest would suggest pulmonary congestion secondary to myocardia failure and the dullness in the right lower lung field would suggest fluid in his right pleural, cavity. In a man 72 years old, the most common cause of myocardial failure with progressive enlargement of the heart and progressive dyspnea would be on a vascular basis causing either a diffuse myocardial fibrosis, coronary occlusion, or insufficiency. The electrocardiogram would point more towards a strain type of pattern from the description rather than an actual coronary occlusion. It is also somewhat against a pericardial pattern, but I believe this point could be argued. However, it is certainly not a diffuse type of pericarditis. If pericarditis is thought of in a person of this age, the most likely cause again is vascular in origin. Certainly the pyogenic type of pericarditis would have caused an

increased temperature, and also an increased white blood count.

A tuberculous pericarditis could occur, of course, without these findings. This man had in the past been in contact with tuberculosis, but his exposure was many years ago, and I doubt if it would manifest itself at this time.

The laboratory findings reveal a markedly increased circulation time and increased venous pressure which is compatible with right and left heart failure. The NPN and the blood sugar were normal and the total proteins were only slightly decreased. His serum sodium and chlorides were moderately decreased while carbon dioxide was about normal. Also the alkaline phosphatase was not markedly above normal. Retention of 64% bromsulph, I believe means very little in a patient with congestive failure; at least we are assuming he had congestive failure, and the increased prothrombin time would also be compatible.

On the physical examination I am unable to find where the liver has been mentioned, or any description given of the abdomen. An x-ray film of the abdomen revealed the liver to be at the upper limits of normal. Apparently this means size. There is one thing in this protocal that we must accept as fact; namely, in two specimens of gastric washings tumor cells were found and the specimens were positive for blood, as were the stool specimens. Evidently this malignancy of the stomach had metastasized by the time the patient was first seen, for on his first examination, a supraclavicular node was noted. If this is a carcinoma of the stomach, and has metastasized to the liver, the marked loss of liver function as shown by the bromsulph test would be unusual, for there must be a tremendous loss of functioning liver tissue for this test to be positive.

If we are to assume that this patient had one disease rather than two, we must put the carcinoma of the stomach, the progressive weight loss, anorexia, dyspnea, and cardiac findings into one diagnosis.

Cases of metastatic carcinoma to the heart and pericardium have been described. Scott and Garvin reported 61 patients with pericardial metastases out of 1,082 cases of malignancy. The heart was involved in 79 instances, and the heart and pericardium together in 22 cases; of these the bronchus and breast were the most common cites of the primary tumor. However, it is reported that esophageal carcinoma metastasized

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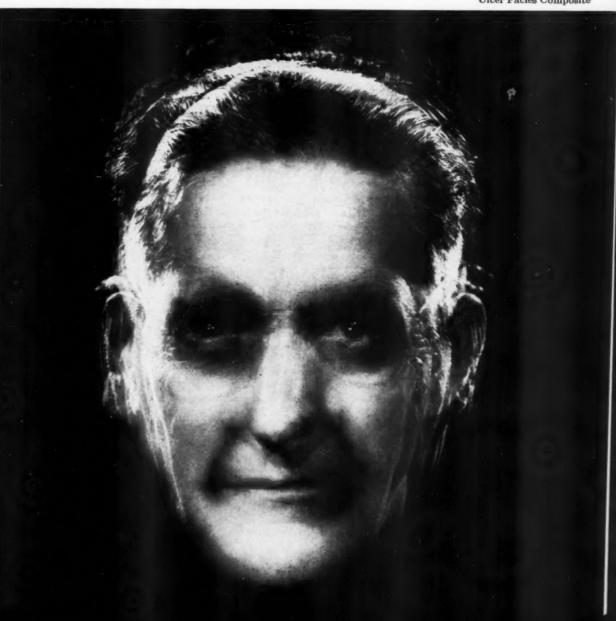
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to the pericardium. The symptoms of pericardial involvement are usually constructive type of pain substernally with progressive shortness of breath and evidence of right heart failure.

Cases have been reported, but rather infrequently, of constrictive pericarditis which I do not believe our patient revealed. The electrocardiograms in pericarditis usually reveal a slightly elevated ST segment and inverted T waves over the areas of involvement. If the pericarditis is diffuse, this may give a typical inverted T wave pattern throughout all leads, but if the pericarditis is localized, as one would suspect in metastatic inolvement, the changes may be limited to only a few leads, but usually AVL and AVF show the changes consistently, and in our patient, only AVL revealed an inverted T wave, but along with two of the V leads and lead 1 and 2, according to the description, the ST segments were sagging. This may have been due to digitalis affect.

Whether this man had pulmonary metastasis I am unable to say. It is certainly possible, but I would suspect his pulmonary difficulties were more likely on a congestive basis. A superior vena caval syndrome causing engorgement of the neck veins, markedly increased venous pressure, I believe is not compatible with the findings in our patient for usually dyspnea is not a common symptom of this condition.

My diagnosis therefore is, carcinoma of the stomach with metastasis to the pericardium and possible myocardium resulting in myocardial failure and death. There may have been liver metastases.

#### DISCUSSION BY DR. JOS. M. GREER

A 72 year old steel worker with severe shortness of breath suggests immediately heart or chest or both, and we are told that he did have an irregular heart about two years previously. However, he got along very well until about eleven months previously when he had a fall of about 20 feet injuring the left side of his chest. This injury was severe enough to produce rib fractures. After that he did not work and had dyspnea. Did he have one of those heart contusions that we now hear about not too infrequently? This injury could well have bumped his heart a little.

Patient had a vague sort of pain, described as "congestion," constricting after exertion and at night, but he had no radiation of this pain. This could go along with heart contusion. One would expect some improvement and he did have some improvement for awhile. However, it shortly got worse again until he was almost completely disabled because of dyspnea, fatigue, etc. About this time he began to cough and expectorate white sputum which brings our attention not only to the heart but to the lungs as well. Then a weight loss was noted which makes us sense some progressive general condition.

When he visited the Medical Clinic we get a history of exposure to tuberculosis. Was this significant or not? I rather think not as the rest of the picture does not fit in with tuberculosis and there was a negative sputum and while an atypical tuberculosis cannot be definitely ruled out in a patient like this, I will dismiss tuberculosis from the discussion.

Physical examination revealed a heart that was not normal, apical murmur, some irregularity, and auricular fibrillation and enlargement. The lung findings at this time of extensive diffuse linear and mottled densities, in the middle and lower portion seem to me significant and the wee little supraclavicular node perhaps should not be considered too lightly. The clinicians apparently thought that heart treatment would help him and perhaps it did for awhile.

The urinalysis was negative so we shall not consider kidney disease as a factor in this patient's illness.

The dyspnea rapidly increased to great severity, with ankle edema.

The physical examination, with the extraordinary dyspnea and the cyanosis of lips, fingers, mucous membrances, and the distended neck veins, was significant and indicates some mechanical interference in the venous return circulation. And now we find more wee small, hard, nontender nodules. What do these mean?

The chest findings of dullness in the back of the lung are significant and indicates something more than the heart findings would produce. The heart was not normal but it does not seem that the heart findings could account for the whole picture; with a rate of 80 and BP 135/90 it would appear that the heart was doing very well, if a heart can ever do well with auricular fibrillation and enlargement. The respirations were quite rapid 32.

The investigative studies were interesting and the heart was not pushing the blood round very fast for some reason. The circulation time (De1953

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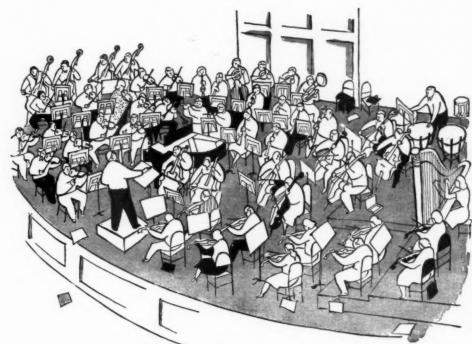
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cholin) was 50 sec. and the normal from arm to tongue, as I presume this was, should be from 8 to 14 sec. Further there must have been some backing up in the venous system as the venous pressure is given as 222 mm. of water and the normal is from 60 to 120 mm. of water. This is also shown clinically in the cyanosis and distended neck veins. The vital capacity is also very low only 900 and the normal should be from 3000 to 4000.

The blood picture was not remarkable except that there was a moderate increase in whites and polys and probably a concentration. The prothrombin time was a little elevated. The non-protein nitrogen was within normal limits as was the blood sugar, namely 96 mgm. the normal ranging from 90 to 120. The total protein of 5.9 was also normal. The sodium equivalent of 127.8 is a little low the normal range being given as 139-152, also the chloride of 92 milliequiv. is slow, the normal range being 99 to 110. The carbon dioxide of 22.7 is a little low the normal being 25 to 29. The alkaline phosphatase of 4.6 units is probably normal. The phenolsulfonphthalein of 62% excretion shows relatively normal kidney function. The bromsulfalein test for liver function was 64% retention of dye; the normal is given as not more than 10% after 30 min. or too little to be read by the colorimeter. So there was definite impairment of liver function. The gastric acidity was said to be within normal range, and, as mentioned above the sputum was negative for acid fast bacilli or abnormal cells.

The gastric washings at two different times were positive for tumor cells, and there was a four plus guaiac test. This is a very positive finding and the tumor cells are assumed to be malignant cells. This is a finding that cannot be disregarded and the only way tumor cells could get into the stomach is from a gastric tumor or a tumor of the lung or bronchus and swallowed sputum (we are told that he did swallow sputum; however the sputum examination was negative for acid fast bacilli or abnormal cells). The urinary chlorides are low as were the blood chlorides. The electrocardiogram shows some cardiac deficiency and auricular fibrillation. However the heart disability was probably not enough to account for the condition of the patient, but one could say that it was not helping him very much.

The x-ray of the chest at this time was report-

ed similar to the previous study of extensive diffuse linear mottled densities in the middle and lower portion with enlarged hilar shadows.

In the attempted GI series, there was a suggestion of an abnormality of the posterior wall of the stomach and a duodenal bulb deformity. The patient was very ill and this is not definite; however I think it should be considered.

The patient was very ill and died on the sixth hospital day. This was after a period of observation and treatment of less than a year.

#### **SUMMARY**

I would say that the clinical and laboratory findings of impaired venous circulation the excessive dyspnea and the clinical and radiological chest findings and the tumor cells in two of the gastric washings would lead to a diagnosis of malignancy of the mediastinum.

I would expect that this was a metastatic malignancy with extensive tumor and inflammatory involvement to the base and hila of the lungs and also probably the pericardium and also one would expect to find some liver involvement.

In spite of the relative absence of anemia and in spite of the normal range of gastric acidity the most likely primary focus would be the posterior wall of the lesser curvative of the stomach.

#### DISCUSSION AT MASSACHUSETTS GENERAL HOSPITAL

Dr. Allen G. Brailey: It is hard to know what to take up first when one is confronted with this welter of signs and symptoms. We might begin by seeing the x-ray films.

Dr. James J. McCort: On the initial chest examination the strand-like and coarse and finely nodular increase in density in both lungs is well seen. These changes extend outward from the hilus to the periphery and involve the greater portion of both lungs. There is no fluid in either costophrenic sinus. The heart is markedly enlarged to the left and right, and there is definite fullness anteriorly, suggesting right ventricular enlargement. A widening of the hilar shadows is seen, suggesting dilatation of the main pulmonary arteries. A film of the chest made one month after the first examination shows very little change except possibly a small amount of fluid in the right costophrenic sinus.

Examination of the gastrointestinal tract was unsatisfactory because of the severe dyspnea. The esophagus was normal. On one film a flattening of the posterior wall of the stomach near

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the lesser curvature is demonstrated. There is also a slight constriction of the duodenal cap and a small diverticulum of the second portion of the duodenum.

Dr. Edward F. Bland: Are the bones all right?
Dr. McCort:: :The skull and long bones were

not abnormal.

Dr. Brailey:: What about the possibility of a pathologic fracture two years before admission?

Dr. McCort: I can see no evidence of it.

Dr. Brailey: There is enlargement of the heart. Is it mostly right or left ventricle? The protocol says "left."

Dr. McCort: It is impossible to determine which ventricle is larger. There is definite right ventricular enlargement.

Dr. Brailey: Could the shadows in the lung be tuberculosis?

Dr. McCort: There is no evidence of cavitation or calcification to indicate tuberculosis.

Dr. Brailey: Do you think the shadows are due to embolization?

Dr. McCort: Multiple small emboli could produce similar nodular densities, but there are strand-like densities in addition to nodules.

Dr. Brailey: Have you ever seen metastatic carcinoma present this kind of picture?

Dr. McCort: A small percentage of metastatic carcinomas show a lymphatic permeation that is compatible with this picture.

Dr. Brailey: There is no interference with the bronchi as far as you can see-no obstruction?

Dr. McCort: There is no narrowing or obstruction of the bronchi.

Dr. Brailey: This man was said to have an "irregular" heart for two years. We may assume that it was fibrillating for at least that long. The heart was really enlarged; he had a grade II systolic murmur, and an abnormal electrocardiogram. The tracing was not inconsistent with infarction, nor was it inconsistent with left ventricular strain and digitalis effect. Would you agree with that, Dr. Bland?

Dr. Bland: It sounds like an aging heart to me—a non-specific electrocardiogram, showing the effect of digitalis, I would think.

Dr. Brailey: What was the nature of the defect? Did he have rheumatic heart disease? Somewhat in favor of that diagnosis is the long-standing fibrillation. But patients with rheumatic heart disease rarely live to seventy-two years of age, and no diastolic rumble was ever

described. It does not seem reasonable to consider rheumatic heart disease here.

Did he have hypertensive and arteriosclerotic heart disease? The blood pressure was repeatedly reported as normal. If he had had hypertension in the past of sufficient degree and duration to result in a heart of this size, surely he would have been in severe congestive failure when the blood pressure fell to this level. But the evidence of congestive failure is not very impressive, even two weeks before he came into the hospital. He had marked dyspnea, to be sure, about which we will say more later, but he had no peripheral edema. The liver was not thought to be enlarged, and only transient rales were heard in the chest.

What else might reduce his hypertension other than heart failure? A failure of the adrenal cortex might do so. To be sure, little was said of fatigability, and there were no pigmentary changes recorded. But we wonder a bit about the adrenal glands because we are tantalized by the information that he was exposed to tuberculosis and the serum sodium was remarkably low, perhaps because he was on a low-sodium diet. He had not had it long, however.

Perhaps coronary-artery disease, without a large infarct but with widespread microscopic scarring of the myocardium, was a factor here. The electrocardiogram would not be inconsistent with this possibility. He is said to have had ill described pain, which may have been angina and was probably considered as such since he was given nitroglycerin.

The dyspnea troubled him greatly and certainly troubles me. There are many causes for dyspnea, but if we confine ourselves to those that occur in the chest, they can be doughly divided into pulmonary and cardiovascular. Of the vascular causes, disease on the arterial side of the pulmonary circuit should have resulted in cor pulmonale. He had a tremendous heart, and the right ventricle and right auricle were enlarged. I am not at all sure that he did not have cor pulmonale. He had little evidence of peripheral right-sided heart failure until the last few days of life. Trouble on the venous side of the pulmonary circuit should have resulted in pulmonary edema, of which we have little or no evidence. We are struck by the curious lack of parallelism between his increasing dyspnea and his apparent cardiac performance as reported. It seems certain that he did not have enough

cardiac failure per se to account for a vital capacity of 900 cc. and that he must have had some pulmonary disease as well. He undoubtedly had some senile emphysema, but I think this picture presented by his x-ray films is very curious, and I suspect that he had something else—either embolization, with marked widespread fine scarring of the lungs, or an endarteritis.

The evidence for cancer consists of hard nodules, which may have been metastatic supraclavicular lymph nodes, and two gastric washings containing tumor cells. Where shall we put this malignant lesion, which must have been either exfoliating or ulcerating? Is it fair to ask if these cells were epithelial in type?

Dr. Tracy B. Mallory: They were interpreted as that.

Dr. Brailey: The obvious answer is carcinoma of the stomach, but if we plump for carcinoma of the stomach, we have to make the diagnosis in the face of normal gastric acidity, a not impossible situation but nevertheless rare. The sputum contained no tumor cells on one examination. That does not exclude tumor of the lung. The patient had a productive cough, and it was noted that he swallowed most of his sputum. I do not see why he might not have swallowed the cells for that matter, although we do not usually look for carcinoma of the bronchus by doing gastric washings. Metastatic pilot glands in the neck occur secondary to carcinoma of the stomach, but they are even more commonly found secondary to bronchial disease. It is possible that we shall find no explanation for the low serum sodium. It was probably the result of the low-sodium diet or the edema. But if he did have damage in the adrenal glands by any chance, it is possible that they were knocked out by metastatic carcinoma-a rather frequent event in carcinoma of the bronchus.

On the whole it seems to me that the odds are in favor of the tumor being in the stomach, and I have not got the courage to put it anywhere else in the face of positive gastric washings. I have raised a number of questions that I cannot answer intelligently, but since I have to take a stand of some sort I will say that this man had arteriosclerotic heart disease and cor pulmonale, probably on the basis of many small emboli, and carcinoma of the stomach with metastases.

Dr. Alfred Kranes: I wonder if the pulmonary metastases may not have been tumor emboli, and if that was so, I think it is not impossible that carcinoma of the pancreas might produce that picture.

Dr. Brailey: I should have mentioned that, but tumor emboli occur in carcinoma of the stomach too.

Dr. Kranes: But much less commonly, I believe.

Dr. Brailey: That is right.

Dr. Bland: Does carcinoma of the branchus frequently metastasize to the supraclavicular lymph nodes?

Dr. Donald S. King: Quite commonly.

Dr. Mallory: Dr. Warthin, I believe you were interested in this case.

Dr. Thomas Warthin: I saw this patient in the Out Patient Department and was struck by the fact that he had heart disease basically. He definitely had abnormal lymph nodes, one of which was characteristic of the Virchow type associated with carcinoma of the stomach. Now seeing the x-ray films, which I had not seen before, I consider them typical of lymphogenous spread of carcinoma of the stomach, such as has been described by Mueller and Sniffen from this hospital.

Dr. Bland: Would sarcoid cause this picture in the lung?

Dr. King: It could; my opinion is that this was not sarcoid.

#### CLINICAL DIAGNOSIS

Congestive heart ailure.

Arteriosclerotic heart disease.

Carcinoma of stomach?

Pulmonary metastases?

#### DR. BRAILEY'S DIAGNOSIS

Cor pulmonale secondary to pulmonary embolization arteriosclerotic heart disease.

Carcinoma of stomach, with metastases.

#### ANATOMICAL DIAGNOSIS

Adenocarcinoma of pancreas, with extension to stomach and metastases to pulmonary lymphatics

Generalized thrombosis of small pulmonary arteries.

Cor pulmonale.

#### PATHOLOGICAL DISCUSSION

Dr. Mallory: Autopsy showed that this man had a cor pulmonale. The wall of the right ventricle measured 7 cc. in thickness; the left ventricle was normal. The lungs showed diffuse involvement of all the lymphatics with tumor. In a search for the source of the tumor

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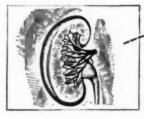
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WHEN WRITING ADVERTISERS PLEASE MENTION THIS JOURNAL

an ulcerated lesion was found in the stomach. A large mass of tumor was found in the region of the pancreas, which at the time of autopsy was interpreted as lymph nodes surrounding the pancreas rather than a primary tumor of the pancreas itself. The subsequent microscopical examination showed that the acinar cells of the pancreas were totally replaced by tumor from end to end of the organ, and I believe that was the primary site. Invasion of the stomach was secondary, but since the secondary tumor had ulcerated into the lumen there is no reason why tumor cells should not be found in the gastric washings. On microscopical examination of the lungs it became evident that nearly all the arteries were surrounded by dilated lymphatics filled with tumor cells and that the majority of them also contained organized thrombi. In only a small number of vessels were tumor cells present within the intra-arterial thrombi, so that tumor embolism was unimportant.

There is no way that I can say from the anatomical findings whether the arterial thromboses, which were old enough to be completely organized, were independent of the carcinoma or secondary to it. I am inclined to think it was secondary, but I cannot prove the point.

Dr. Kranes Did you find thrombosis present in the areas where there was no tumor, or was it so widespread that you could not tell?

Dr. Mallory: The thrombosis was limited to small vessels, and virtually all of them were surrounded by tumor.

Dr. Bland: What we saw in the x-ray films was the lymphatic system of the lungs?

Dr. Mallory: Pulmonary lymphatics in normal conditions are so collapsed that they are scarcely visible. In this lung an artery was surrounded by four or five lymphatics, each so distended with tumor as to be of diameter equal to that of the artery.

# LOGIC AND LANGUAGE IN MEDICAL WRITING

Good books are available on scientific writing in general and on medical writing in particular. Apparently not enough emphasis, however, has been given to the process that should precede the writing and follow the finding of the substratum of the writing. This process is careful and thorough logical thinking.

In an article on Chicago's philosopher Mortimer Adler (Time [Mar. 17, 1952]) we read: "Like a Socratic traveling salesman, he has moved up and down the country, talking to the young and causing acute attacks of thought in thousands of college students who scarcely ever thought of thinking before." Although thorough thinking does not seem to be one of the popular functions of human beings, acute attacks of thinking should at least precede any kind of scientific writing, and proper language should bear witness to the thinking process. This is lacking in statements such as "preventive geriatrics may well be started in patients no older than 20," or "the patient had had acute retention for twenty years and had been forced to catheterize himself daily." If preventive geriatrics should start at 20, why should not preventive pediatrics start before conception? It is only a matter of semantics to call the latter eugenics and the first plain medicine. When an author of a recent article in the Journal of the American Medical Association distinguished between a primarily "physiological" and a primarily psychological illness, he forgot that an illness is never physiological but always pathological.

Objectionable wording may result from lack of logic or linguistic knowledge. The first is well illustrated by a reviewer's criticism of Russell Brain's book on Disease of the Nervous System (J. Am. Med. Assoc., 148, 1455 [1952]). The reviewer takes exception to the term "pseudobulbar palsy" because there is nothing "pseudo" about this palsy. He overlooks the fact that "pseudo" in this usage refers to bulbar and not to palsy; hence the correct and generally used term "pseudobulbar palsy." The reviewer overlooks the fact also that spastic spinal palsy is not called "pseudospinal palsy" because this palsy is caused by a spinal lesion, as contrasted with "pseudobulbar palsy" which is not caused by a bulbar lesion.

Lack of linguistic knowledge is encountered in many medical papers. It is shocking to read that the word "allergy" should have been derived by von Pirquet from the Greek word "ergon" meaning "work," plus an alpha privative. Allergy actually is derived from allos ("different") and ergon ("work," "action"). Afibrinogenopenia literally translated means exactly the opposite of what the author had in mind—that is, it means that there is no diminution of fibrinogen.

If anyone criticizes an authors language, he

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should be quite sure that his criticism is justified. In the anonymous review of Brain's book, the reviewer, in discussing the terms "paresthesiae" and "dysesthesiae," says "para means beside or added to" and "paresthesiae therefore imply an external stimulus." Far from it. Para is a Greek prefix denoting a departure from the normal, and esthesia (or, more correctly, "aesthesia") designates sensations of any kind, not merely those produced by external stimuli. For example, kinesthesia is not produced by external stimuli. The reviewer rejects term "muscle tone" instead of "muscle tonus." Using the word "tone" instead of "tonus" complies, however, with the usage in all textbooks and with the definition in Webster's Dictionary. In the reviewer's opinion there cannot be an "antibrachium," only an "antebrachium." Both terms, "antibrachium" and "antebrachium," are correct and are used interchangeably. Antibrachium is derived from Greek, and in this connection anti means "opposed to." Antebrachium is derived from Latin and means, literally, "forearm." The Basel anatomical nomenclature adopted this Greek version, "antibrach-

The use of eponyms is unquestionably overdone. What name should we prefer, however, to the term "parkinsonism," to which the reviewer takes exception? Every student of medicine should be familiar with the term "Parkinson's disease," designating paralysis agitans, just as Babinski's name should remain attached to the most important reflex indicating a lesion of the pyramidal tract. These and similar eponyms are at least a minimum requirement for a knowledge of modern medical history. Why should the name of outstanding clinicians be forgotten if no one takes exception to much more offensive terminology, such as Klebsiella pneumoniae, Escherichia coli, or Neisseria gonorrhoeae? Purification of technical terminology should start

by rejecting such horrible neologisms as "rubro-blasts" or "rubrocytes," and should once and for all eliminate such frequent linguistic offenses as "pruritis" (pruritus), "lupus erythematosis" (erythematosus), or "lymphogranuloma venerae" (venereum). The other day I even read about a "hemorrhagia per ano" (anum) and about something ad "voluminem" (volumen). The man who coined the word "appestat" to designate the cerebral center regulating appetite (analogous to thermostat), or the one who used the term "pie syndrome" in the title of an article concerned with the syndrome of pulmonary infiltration with eosinophils has committed an inexcusable linguistic offense.

One might wonder at the motive for the unduly widespread tendency to use abbreviations in practically every field of verbal communications. Many people do not even know what some abbreviations they use stand for. Saving time cannot always be the motive.

Julius Bauer

1680 Vine Street, Los Angeles 28, California

 Bibliography has been omitted deliberately, for obvious reasons. It may be requested from the author.
 Reprinted from Science, January, 1953.

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# The PRESIDENT'S Page

#### CONVENTION TIME AGAIN

THE ARIZONA STATE MEDICAL ASSOCIATION WILL HOLD ITS CONVENTION APRIL 26TH THROUGH APRIL 29TH AT THE PIONEER HOTEL, TUCSON, ARIZONA.

PRESIDENT-ELECT HAYDEN AND HIS COMMITTEE HAVE ARRANGED A PROGRAM OF OUTSTANDING SPEAKERS THIS YEAR. MANY GUEST ORATORS HAVE BEEN INVITED AND MANY OUTSTANDING PHYSICIANS OF OUR OWN STATE WILL PARTICIPATE IN THE SCIENTIFIC PROGRAM.

THE EXECUTIVE SECRETARY HAS ANNOUNCED THAT ALL THE DISPLAY PLACES FOR EXHIBITS HAVE BEEN RESERVED.

THE WOMAN'S AUXILIARY TO THE ARIZONA MEDICAL ASSOCIATION WILL HOLD ITS ANNUAL MEETING AT THE SAME TIME. BOTH MRS. ENFIELD AND MRS. SCHOFFMAN ASSURE ME THAT A MOST INTERESTING PROGRAM HAS BEEN ARRANGED FOR THE WOMEN. THIS PROGRAM WILL INCLUDE, IN ADDITION TO THEIR REGULAR BUSINESS, SEVERAL OUTSTANDING SOCIAL FUNCTIONS. THE PRESIDENT'S BANQUET TO BE HELD ON APPRIL 29TH AND THE ANNUAL MEDICAL ASSOCIATION GOLF TOURNAMENT WILL HIGHLIGHT THE SOCIAL FUNCTIONS OF THE ENTIRE CONVENTION.

CONVENTION TIME MARKS THE CLOSE OF ANOTHER YEAR OF THE ASSOCIATION'S WORK. IT IS WITH A GREAT DEAL OF PLEASURE THAT I LOOK OVER THE PAST YEAR AND PROUDLY ANNOUNCE SOME OF THE ACCOMPLISHMENTS OF THE CHAIRMEN OF THE VARIOUS COMMITTEES. IT IS NOT POSSIBLE IN THE SHORT SPACE TO PRAISE AND NAME EACH AND EVERY ONE OF THEM, BUT ALLOW ME TO CALL TO YOUR ATTEN-TION SOME OF THE OUTSTANDING ACCOMPLISHMENTS WHICH WERE NEW AND ENTIRELY DIFFERENT THIS YEAR. OUR SEMINARS HAVE BEEN HELD FOR THE PAST TWO YEARS. THIS YEAR, UNDER DR. MELICK, THE INNOVATION OF THE TELEPHONIC SEMINAR WAS ADDED. THIS CON-NECTED WINSLOW, PRESCOTT, PHOENIX, YUMA AND TUCSON AND PROVED TO BE A VERY ECONOMICAL MEANS OF DISSEMINATING MEDI-CAL INFORMATION. UNDER THE CHAIRMANSHIP OF DR. LAWRENCE, A TV PROGRAM, CALLED THE "M.D.'S NOTEBOOK" WAS ORIGINATED FROM KPHO-TV. THIS, IN THE FIELD OF PUBLIC RELATIONS, HAS DRAWN CON-SIDERABLE FAVORABLE COMMENTS. THEN UNDER THE CHAIRMANSHIP OF DR. BREGMAN, THE CANCER COMMITTEE OF THE ARIZONA MEDICAL ASSOCIATION IN CONJUNCTION WITH THE AMERICAN CANCER SOCIETY WAS ONE OF THE OUTSTANDING SEMINARS OF THE ENTIRE SOUTHWEST.

I WISH TO TAKE THIS OCCASION TO THANK EACH AND EVERY ONE OF MY COMMITTEE CHAIRMEN AND THE MEMBERS OF THEIR COMMITTEES FOR THE WHOLE-HEARTED COOPERATION WHICH THEY EXHIBITED THIS YEAR. I HUMBLY THANK THE WHOLE ASSOCIATION FOR ALLOWING ME TO PRESIDE DURING THE PAST YEAR.

THOMAS H. BATE, M.D., President Arizona Medical Association

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# Editorial

NO. 4

### ARIZONA MEDICINE

Journal of

ARIZONA MEDICAL ASSOCIATION, INC.

VOL. 10 **APRIL**, 1953 EDITORIAL BOARD 

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.

- Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. (See MEDICAL WRITING by Morris Fish-bein.)
- 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.

  4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
- 5. Submit manuscript typewritten and double-spaced.
- 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
- The Editor is always ready, willing, and happy to help any way possible.

#### **EDITORIAL** DANGER FROM ASTEROL

Asterol (Roche) is a new anti-fungal drug, a benzothiazole derivative, which has proved to be highly effective in the treatment of various common superficial fungous infections such as tinea capitis, tinea cruris, tinea pedis, etc.

Attention is called to reports of toxic reactions which occurred in small children during topical therapy with Asterol. 1, 2, 3. These reactions, all of which occurred in children under four years of age, consisted of visual hallucinosis, depression of the functions of the sensorium, and tonic and clonic convulsions. Prompt recovery occurred in every case when use of the drug was discontinued. No deaths have been reported.

The possibility of such reactions makes it unwise for a physician to order the use of Asterol on small children. When used on limited areas in older children or adults, however, the drug seems to be perfectly harmless.

1. Wilson, J. W., Levitt, H., Harris, T. L., and Heiligman, E. M.: Toxic Encephalopathy Occurring During Topical Therapy With Asterol.

J.A.M.A., 150:1002, Nov. 8, 1952.

2. Hitch, J. M.: Neurotoxic Symptoms Following Use of Asterol Dihydrochloride.

J.A.M.A., 150:1004, Nov. 8, 1953.

3. Featherstone, W. M.: Convulsions Following Use of Asterol Dihydrochloride.

J.A.M.A. 150:1006, Nov. 8, 1952.

#### LETTERS TO THE EDITOR

ON THE SAFETY OF SUPERFICIAL LOW-VOLTAGE X-RAY THERAPY

To the Editor:

I wish to comment on the safety of superficial low-voltage x-ray therapy. We frequently hear remarks made by lay persons, and unfortunately also even by physicians, to the effect that superficial x-ray therapy is dangerous and should never be employed in benign dermatoses. Such remarks are indeed unfortunate, coming as they do from inexperienced and uniformed persons.

The plain simple truth of the matter is that superficial low-voltage x-ray therapy as employed in this day and age is not dangerous but is perfectly safe. To be convinced of this fact one merely needs to read the report of extensive studies by Sulzberger et al. (Arch. Derm. and Syph. 65:639-650, June, 1952.) These authors conclude from their studies of 1000 cases treated over a period of 20 years, that "There is no evidence that cancers, roentgen ulcers, or any

other dangerous sequalae are produced, even with the largest doses which most dermatologists today consider permissible for benign dermatoses (total 1400r.)"

These were careful and thorough studies. All physicians are urged to study this report completely. They would then be in a position to refute statements about harmful effects of x-rays. And they would then see that it is the obligation of the physician to recommend such treatment to many patients, rather than to withhold it because of ungrounded fears.

Superficial roentgen-ray treatments as administered according to standard accepted technics by experienced and careful operators are perfectly safe.

Louis G. Jekel, M.D. Phoenix, Arizona

# ITEMS OF INTEREST LOOK AT THE FINGER NAILS

Pre-employment examinations are becoming more and more the order of the day. In many occupations the finger nails are important, and such conditions as absence, atrophy, extreme thinness, fragility, splitting, separation into layers, detachment from the nail bed and long standing infections are serious handicaps. In a paper published in 1947 in the Journal A.M.A., the writer gives in detail all the organs to be examined before engaging the worker, but the nails were not even mentioned. A recent article in Industrial Medicine and Surgery calls attention to the importance of examining the nails and recording their condition at the time of employment. Good descriptive notes should accompany the examination record. This will protect the employer against false claims of occupational (Ronchese, Industrial Med. & Surg., lesions. Feb., 1953).

W.W.W.

#### EXPERT TESTIMONY

Being called on to give expert testimony can be one of the most embarassing experiences a doctor undergoes. An article by McCord (Indust. Med. & Surg., Feb., 1953) is well worth careful study by any doctor who anticipates being called into court to give any sort of testimony. Do not say "it cannot happen to me" because you may be involved in an accident, or witness an accident, and there you are. In his professional capacity, a doctor may be called on to testify as a "material witness" by appointment of the judge; he may be asked to testify as an "expert witness." How to avoid the pitfalls of cross examination, of inadequate preparation, of the hypothetical question—are all discussed by Dr. McCord. Read it and profit.

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#### Heart Accidents and Compensation

When a workman suffers a cardiac catastrophe while at work, the question immediately arises as to whether this is a compensible injury or not. This problem was discussed in a panel discussion on Heart Disease and Industrial Medicine, reported in Industrial Medicine and Surgery, Feb., 1953, pp. 76-79. Mr. Wm. C. Hartman, an attorney of Cleveland, O., contributed the discussion on Compensation. He presented illustrations of what has been declared by courts to be injuries so far as heart cases are concerned. If a man is doing his usual and normal work and suffers a heart attack that is not an injury. If he is doing something unusual and has a heart attack, that is an injury. Falling, and suffering a heart attack because of the fall, is compensable. Some years ago, our Industrial Relations Committee were requested to decide an important question of this type. A janitor in the Capitol Building fell down a flight of stairs and was picked up dead. Up to the time of the fall he was doing his usual work. He was a cardiac case. Did his heart stop while he was doing his usual work-and the fall result because he was already dead? Or did the fall cause the heart to stop? In one case it would be non-compensable; if the other, his family would get death benefits. The Committee decided he was already dead before he fell.

W.W.W.

### NOTICE

ALL CONTRIBUTORS OF ARIZONA MEDICINE SHOULD HAVE THEIR MATERIAL IN THE JOURNAL OFFICE NOT LATER THAN THE 15th OF THE MONTH PRIOR TO PUBLICATION IN ORDER TO HAVE ARIZONA MEDICINE REACH ITS READERS ON OR BEFORE THE 15th OF THE MONTH.

Material arriving after that date will be published the following month.

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# TOPICS OF Current Medical Interest

#### RX,, DX., AND DRS.

By GUILLERMO OSLER, M.D.

There may be quite a bit about diseases of the lungs in this month's column, but that is because quite a lot is available . . . The Twelfth VA-Army-Navy- Conference of CHEMOTHERAPY OF TU-BERCULOSIS was held in mid-February, and reported two weeks later . . . These conferences continue to be amazing. More than 270 specialists were in attendance, most of whom paid their own expenses! The conference idea is one of the first real ventures for the production of accurate data, by a comparison of methods, using pilot studies and then co-operative summation, and being bound by 'randomized' selection of patients and routines . . . The analysis of 85 papers gave the following items, -1. It is confirmed that three routines of treatment for tuberculosis by streptomycin and PAS are therapeutically equivalent. 2. The use of 1 gm of SM twice a week is adequate, but also conserves drug for more prolonged use before development of resistance. 3. Use of INH alone is abandoned, since use with SM and/or PAS delays resistance to it. 4. It is possible that INH-resistant bacilli may often not be virulent. 5. There is further evidence that bacilli recovered from closed necrotic lesions after long-duration chemotherapy are stainable but not alive at resection. This may be due to the drugs, but also to environment factors. 6. No final decision has been reached as to whether such 'healed' lesions should be resected. 7. Antibacterial therapy should not be interrupted before its conclusion, or before surgery, since re-treatment results are not as good, and resistance is more common, and complications at surgery are more serious and frequent. 8. Erythromycin, terramycin, and mycomycin, have little to offer against TB. Viomycin is not to be studied further. Aldinamide (pyrazinamide) should be saved for a few weeks brief usage, perhaps as a protection during surgery. 9. The use of SM, PAS, and INH together, in a 'triple-threat' regiment, is not as yet approved as the best routine, but is being studied, and some think it to be logically best from the point of effect and resistance. 10. The INH dose of 150 mg. per day seems as effective as 3000 mg., tho the latter is being studied further. 11. The "therapeutic target point" is considered to be closure of cavities by planigraphy, conversion of sputum by culture, and stability of x-rays for 6 additional months. Cases are to be treated to that point. 12. There shall be studies, by randomization, of pneumoperitoneum and rest therapy, with a basic routine of chemotherapy in use.

Two special notations should be made about the ISONIAZID DRUGS, one good and one bad . . .

The tedious injection of streptomycin into the spinal canal of Tbc meningitis patients seems to be needless; the use of isoniazid by mouth, with its free passage from the blood into the spinal fluid, is more than equally efficient . . . Reports on the CNS stimulative effects of IPNH (iproniazid, or 'Marsalid') have now included a fairly high incidence of psychotic reactions, some of which have been persistent. We have seen one such reaction in a patient with an unstable psyche.

The most unique COMBINATION OF DRUGS, just on the market, is a combination of 50 per cent streptomycin and 50 per cent dihydrostreptomycin. It results from the theory that the neuro-toxicity of the former is mostly vestibular and the latter auditory . . Practice has shown that, over the same period of time, the combination has far less toxicity than either. The total dose of each is only half, and it is the total dose which is the chief toxic factor . . . Squibb makes it as 'Distrycin,' but spoils it for some drug purists by also making it up with one or two kinds of penicillin.

Arizona does not shine in memberships in the American Board SUBSPECIALTY OF PULMO-NARY DISEASES—but then what state does? There are less than 120 who have been certified in the entire United States, and more than half of these were given diplomas at the start of the program in 1939 . . . Arizona has only two who are certified in Pulmonary Diseases. One, from Phoenix, was certified on his outstanding record in 1937. The other, in Tucson, was certified by examination in 1945 . . . Even the certification in the subspecialty requires preliminary certification in Internal Medicine (a fairly rugged pair of exams), Arizona should have more members . . . Even without a university medical school as a stimulus we should do better. It is a top rank to aim at.

An interesting contrast was presented by Dr. Esmond Long in the John Bell TB Lecture which he gave at Hennepin County, Minnesota. He described THE DISEASE AS IT IS SEEN IN A BIG CITY (Philadelphia clinic (the Phipps Institute) to people in a state where the disease is more uncommon and minimal . . . It should be a shock to Minnesotans, who have taken some very lofty attitudes towards certain treatment and control methods. They reject BCG because it causes positive tuberculin tests, and they can resect most of the lesions because they are so small . . . Dr. Long's cases are still mostly far advanced. They still

have to live at home for months because of the lack of san beds. The Institute must try to control the disease by ambulatory or home chemotherapy, tho they know such a routine is faulty . . . Sounds like Snow White meeting the old witch.

ROUTINE ADMISSION X-RAYS seem to be very logical for patients who enter general hospitals. Papers continue to be published on the value to diagnosis. All of the hospital and TB groups advise it. The American Trudeau Society Committee for Program Development suggests to the N.T.A. that it should seek to promote such a program as its first future objective . . . Everybody is for it except the hospitals, apparently . . . A recent survey in Wisconsin gives only mild encouragement, since 22 hospitals have a program in use. However, only 110 of the state's hospitals replied; some of the 22 were filming only small percentages of the admissions; many hospitals do not yet examine their personnel members; and the increase in use of the method was only a small one in the past 5 years . . . There ought to be a law.

The Public Health Reports have contained sections on 'COMMUNITY-WIDE CHEST X-RAY SURVEYS,' with methods, records and reports, etc. Every step in the entire program was outlined, and it would seem almost inevitable that the results would come out the end of the machine in perfect corder . . . The results from dozens of large or even huge surveys have been published. They are loaded with accomplishment and large figures, but an analysis of the follow-ups reminds us that the plan was run by humans, dealt with human patients, physicians, social workers, et al. They just don't move like digits. They can be careless, rebellious, get lost, and even sue the survey committee.

Forty years ago a famous public health slogan was "DON'T SPIT!" It has languished in favor of other approaches, and because the major reason (TB) is probably more often spread by closer contact... Prevention of other ailments could profit by a revival of the slogan "If You have sputum, DON'T SPIT! You may have something more than bronchitis or the tobacco habit." Desert (Valley) fever, if you live in the southwest or parts of California, for instance. Histoplasmosis, if you live in the right part of south central United States... personally I would applaud seeing a spitter have bad luck, such as slipping on a banana peel or getting a punch in the nose.

Dr. Harold Trimble of Oakland, California is usually annalyzing the favorable results of pneumoperitoneum; but he has recently (in Dis. of Chest) published the results of his pneumothorax cases . . . 'His cases' is the phrase used, since he only reports 'adequated' pneumothoraces, or those which have passed the barriers of 'no space,' 'inadequate space,' etc., to the point of having cavities absent and sputum absent or negative. Truly,

as he admits, 'a picked group' . . . There is encouragement for those who favor the definitive surgical measures. Of 444 cases, 120 did not reach voluntary discontinuance. In the 277 voluntary D.C.'s, 45 had reactivations of the disease. There were 35 deaths . . . It is only fair to say that these patients had no regular protection by chemotherapy.

Dr. Cabot Brown of San Francisco has finally published his research on the BEHAVIOR OF AIR VOLUME in the pleural and peritoneal spaces during rapid changes in altitude . . . His methods were practical but at times bizarre, and make one envious of his imagination. One would think of using a pressure chamber, or even an airplane, but how many would use an elevator? His results indicate that Boyle's Law is not applicable to air applied in pneumo-therapy (no reciprocal relationship between gas pressure and volume) . . . Ten patients were able to tolerate 10,000 ft. altitude without discomfort. The pneumo pressures did not follow the predicted levels. Dr. Brown believes that patients who are comfortable at sea level can safely fly in pressurized planes.

Terramycin is now said to be effective in two situations where antibiotics with narrower spectrums have had some success. Unfortunately the criteria of success must of necessity be vague . . . 'Infectious asthma' is that which may flare following respiratory infections. Patients were given a supply of a dozen small doses, to be started if and when the wheezing began. Their asthma period was often shortened . . . Pertussis has been relieved in two respects—less whooping, and fewer secondary infections.

Any physician who hasn't seen the new method of advertising which PFIZER uses in the J.A.M.A should turn to the first portion of any recent journal at once. The 'SPECTRUM' is a series of ten pages, broken up into new items, illustrations, articles (baldness, salicylates, cough, oil and medicine.), an editorial, etc. . . . A few unobtrusive Pfizer advertisements are labelled and spotted in places where they do not interrupt . . . Really an amazing concentration of interest, and good taste, and uniqueness. Here's hoping they can swing it for a long time—and maybe swing some this way.

The Pfizer 'Spectrum' reports on a new personalized HOSPITAL PAGING SYSTEM, initiated by Charles Neergaard, a famous hospital consultant, and perfected by Al Gross, the inventor of the walkie-talkie. (It is now marketed for Royalcall, Inc., by the Standard Electric Time Co. of Springfield, Mass.) . . . Each physician picks up his own 12-ounce radio receiving set and slips it in his pocket as he checks into the hospital. The set is about  $6x2x^{1/2}$  inches in size, and has the doctor's number on it . . . When a message is received for him by the telephone operator, she presses a button at his number. His set gives off

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# HOSPITAL

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Published Bi-Monthly by the Hospital Benefit Association, First Street at Willetta, Phoenix

April, 1953

# Do you know the answers?

#### Q. How do doctors and hospitals benefit from the Benefit Association?

- A. Surgical and hospital bills incurred by member-patients under their coverage are quickly, efficiently paid by the Association, thus cutting down paper work and collection problems of doctors and hospitals.
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- A. No. HBA fees are payable only to duly licensed physicians, (M.D.'s).

#### Hospitals Welcome **HBA** Patients

When members of the Hospital Benefit Association go to a hospital for treatment, they are sure of receiving immediate attention. This prompt admission, of course, enables doctors to provide quicker, more effective treatment, especially in cases of emergency.

There are two important reasons for this fine, cooperative spirit:

(1) hospitals know that bills incurred by HBA members are sel-dom rejected because members are careful not to try to gain admission for conditions not covered under their memberships;

from collection problems.

### Report to President Shows Big Gains in U. S. Health, Shortage of Doctors, Nurses

Hospitals
Hospital
Health Needs of the Nation is an outstanding source of information on America's health conditions. This 1,500-page report, entitled, "Building America's Health", covers every important phase of the country's health picture. Following is a summary of what the Hospital Benefit Association believes are some of the most pertinent facts in the report. the report.

• Death rate from tuberculosis in the first half of this century dropped from 194 down to 27 per 100,000 population. Death rate from all infectious diseases dropped from 676 per 100,000 population in 1900 to 79 in 1949.

 Maternal death rates have declined from 61 per 10,000 live births in 1915 to 9 in 1949. Infant mortality during the same period decreased from 100 per 1,000 live births to 31.

· Heart disease, cancer and cerebral accidents head the list of death Fatal accidents are fourth. causes.

#### Need For More Medical Workers, Hospital Beds

There are now about 212,000 physicians, including those retired.
In 1952, U. S. medical schools graduated 6,100. Medical schools are unevenly distributed, giving people in some parts of the country much less opportunity for admissions.

#### HATS OFF!

The Arizona Medical Association will hold its annual meeting, April 26-29. Since last year's convention, the Arizona medical profession has made

many gratifying achievements.
The Hospital Benefit Association heartily congratulates the Arizona Medical Association and its members for such outstanding performance. And it extends its best wishes for most successful meeting again this year.

#### **HBA** Articles Advise Members to See Doctors

The Hospital Benefit Association believes that when people are well-informed about health matters, they are more likely to seek prompt medical treatment when dard of one bed for every 220 peoneeded.

In keeping with this idea, the HBA regularly publishes health articles by leading doctors in its bi-monthly Bulletin. And the Association strongly urges members to "see your doctor" immediately (2) hospitals appreciate HBA's sociation strongly urges members quick, efficient and direct pay- to "see your doctor" immediately ment plan that relieves their staffs if they have any symptoms of ill-

If all parts of the nation had the same average physician-pa-tient population ratio as New England and the Central Atlantic states, by 1960 we would need 45,-000 more physicians than the predicted supply.

sion than others.

- There are now more than 365,-000 active nurses, but the shortage by 1960 may exceed 50,000.
- Paramedical workers are in such short supply that hospitals report 18,000 vacant positions in 7 the important paramedical fields.
- Provision of hospital care is now one of the ten top service industries.
- 6,600 registered hospitals have some 1½ million beds and admit more than 18 million patients annually.
- · Using the Hill-Burton Act stanple, we need about 700,000 more general hospital beds.
- Total expenses in 1951 for medical research were \$180 million—an amount equal to three-tenths of one per cent of the nation's defense budget-and less than the amount spent on monuments and tombstones.

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a weak buzz which only he can hear and which he must cut off at the instrument. He then answers the telephone and resets his buzzer . . . This is similar to the more cumbersome paging radios we have described here for use while on calls.

This is year-end SUMMARY TIME AT THE MAYO CLINIC, and the 'Proceedings' has several items of general interest . . . About 75 per cent of the patients diagnosed as having primary carcinoma of the stomach underwent exploratory operation. Gastric resection was performed on 60 per cent, and gastroenterostomy on 6 per cent . . . Vagotomy was done in 8 per cent of the operations for duodenal ulcer, with no variation in the past 4 years . . . Operations on the biliary system and pancreas were performed on 1767 patients, with a 'hospital mortality' of 1.3 per cent . . . Deaths in this series from pulmonary embolism were less, in part due to the more frequent prophylactic use of dicomarol, 48 hours after cholecystectomy . . . Hyrdocortone (compound F) has been used on many types of painful joints and bursae, with fairly good relief in the bursitis cases. Results in osteoarthritis are transient and poor.

The Joint Commission on Accreditation of Hospitals is 'in business' as of Jan. 1, 1953 . . . You may

have missed the end of the ruckus which started a couple of years ago, when it seemed that one organization was about to hijack a procedure which had been the property of another. The end was quiet and diplomatic, and it looks like a 'good deal' . . . The American College of Physicians, the A.C. of Surgeons, the Am. Hospital Ass'n., the A.M.A., and the Canadian Med. Ass'n. are combined to do the job, with a certain number of votes apiece (3-3-7-6-1), a director (Edwin L. Crosby, M.D.,) and a headquarters in Chicago.

A suggestion that 'cat-scratch fever' could be due to (or mistaken for) tularemia comes from Connecticut . . . Woodworth reports a case, treated successfully with Terramycin, which developed agglutinins for P. Tularensis . . . Two of the other seven cases of tularemia in the state resulted from contact with cats, one from a scratch . . . This may be a coincidence, or could be a lead.



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### YOUR GROUP ACCIDENT AND HEALTH PLAN

The result of our recent insurance survey showed that the majority of members favored Group Accident and Health Insurance on a statewide basis. The Medical Economics Committee surveyed available plans and selected the program of the National Casualty Company of Detroit, Michigan. The report of this Committee was unanimously accepted by your Council.

Three fundamental factors motivated your Council to approve this Group Accident and Health plan.

- 1. To offer Income Protection to all eligible members with THE SAME MAXIMUM BENE-FITS TO EACH ELIGIBLE DOCTOR, regardless of past medical history.
- 2. To provide a contract which may remain in effect AS LONG AS THE MEMBER REMAINS IN THE PRACTICE OF MEDICINE.
- 3. To secure STATEWIDE protection thus SERVING ALL 14 COUNTIES ON THE SAME BASIS.

The Plan has been developed to offer our membership a service—and its purpose is the provision of a substantial emergency income to take the place of that lost when unforseen accidents and sicknesses occur. This is YOUR plan officially sponsored by The Arizona Medical Association, Inc.

ALL MEMBERS UNDER AGE 65 ARE ELIGIBLE FOR MAXIMUM BENEFITS OF \$300.00 PER MONTH, REGARDLESS OF PAST MEDICAL HISTORY AND PRE-EXISTING CONDITIONS. THE INSURANCE MAY BE CONTINUED AS LONG AS A MEMBER IS IN ACTIVE PRACTICE. THERE IS NO AGE LIMIT FOR RENEWAL.

You have all received a letter and a brochure showing the details of coverage and rates together with an application. Your Council recommends that you take advantage of this opportunity and if you have not already taken the time to complete your application, please do so. This will attain a high place among the many services The Arizona Medical Association, Inc., offers to its members.

Thomas H. Bate, M.D. President

#### PIMA COUNTY MEDICAL SOCIETY

On March 10th, 1953, the following physicians were elected to membership in Pima County Medical Society:

James McIlroy Fritz, M.D. Dr. Fritz is certified by the American Board of Surgery, and will do General Surgery, with a sub-specialty of Thoracic Surgery.

Delbert William Hess, M.D. Dr. Hess will do General Practice.

Ursus Victor Portmann, M.D. Dr. Portmann is certified by the American Board of Radiology, and will practice Therapeutic Radiology.

At our March 10th regular meeting we had a very excellent speaker in Louis J. Regan, M.D., LL.B., Legal Advisor to the Los Angeles County Medical Association. His subject was "Problems of Medical Ethics and Jurisprudence" and I can truthfully say I believe everyone enjoyed hearing him.

W. B. Steen, M.D. Secretary-Treasurer Pima County Med. Soc.

# OBSOLETE DIATHERMY APPARATUS

After June 30, 1953, it is unlawful to operate nonconforming diathermy apparatus. The Federal Communications Commission has been most cooperative with the medical profession and manufacturers by extending for one year the deadline for replacing nonconforming diathermy equipment. After June 30, 1953, all outmoded diathermy equipment used for therapeutic purposes must meet the requirements of the Federal Communications Commission. Surgical diathermy apparatus is exempt.

Information coming to the Council on Physical Medicine and Rehabilitation indicates that there are a relatively large number of nonconforming diathermy apparatus being used in departments of physical medicine, in hospitals, in related institutions, and by physicians in their offices. To avoid a last-minute rush for equipment, physicians are advised to look into the available supply. A list of accepted diathermy apparatus may be obtained by writing to the Council on Physical Medicine and Rehabilitation at 535 North Dearborn St., Chicago 10, Ill.

# Arizona Pharmaceutical Page

### Prescription Facts For Your Information

TOTAL PRESCRIPTION VOLUME IN 1952 WAS \$990,164,000 NATIONALLY—ARIZONA'S PORTION OF THIS WAS \$5,493,291.75.

TOTAL NUMBER OF PRESCRIPTIONS FILLED IN 1952 WAS 419,447,000, AN AVERAGE OF 2,152 PRESCRIPTIONS PER DOCTOR, BASED ON THE 117,000 DOCTORS IN THE COUNTRY. IN ARIZONA WE FILLED A TOTAL OF 2,327,666 PRESCRIPTIONS FOR AN AVERAGE OF 8,254 FOR THE 282 PHARMACIES IN THE STATE (THIS DOES NOT INCLUDE MEDICATION AND PRESCRIPTIONS FURNISHED BY THE 15 MAJOR HOSPITAL PHARMACIES).

THE AVERAGE PRICE OF ALL PRESCRIPTIONS IN THE COUNTRY WAS \$2.36, AN INCREASE OF 4.9 PER CENT OVER THE 1951 AVERAGE OF \$2.25. BASED ON THIS NATIONAL AVERAGE, THE PHARMACIES OF THIS STATE RECEIVED AN AVERAGE DOLLAR VOLUME OF \$19,479.75 DURING THE YEAR. THIS FIGURE ACCOUNTED FOR 22.9 PER CENT OF THE TOTAL VOLUME OF BUSINESS DONE BY EACH STORE.

THE RATIO OF REFILLED PRESCRIPTIONS TO NEW PRESCRIPTIONS FILLED WAS 36.3 PER CENT IN 1952.

1952 SHOWED A 9.3 INCREASE IN PRESCRIPTION WRITING WITH 25.1 PER CENT OF THE TOTAL PRESCRIPTIONS WRITTEN BY SPECIALISTS AND 74.9 PER CENT WRITTEN BY GENERAL PRACTITIONERS.

ANTI-INFECTIVES TOPPED ALL OTHER PRESCRIPTIONS DURING THE YEAR IN NUMBERS FILLED (18 PER CENT), FOLLOWED BY SEDATIVES (9.1 PER CENT), DERMATOLOGICS (6.9 PER CENT), ANALGESICS (6.4 PER CENT), AND ANTI-SPASDOMICS (6.3 PER CENT). THESE FIVE CATEGORIES ACCOUNTED FOR ABOUT ONE-HALF OF ALL PRESCRIPTIONS FILLED. THAT THE ANTI-INFECTIVES WERE LAST YEAR'S TOP PRESCRIPTION TYPE WILL SURPRISE NO ONE. THIS CATEGORY LARGELY INCLUDES THE ANTIBIOTICS AND THE SULFA DRUGS. BUT IT MAY COME AS A SUR-PRISE TO MANY OF YOU TO LEARN THAT THE SEDATIVES-HYPNOTICS CATEGORY TOTALLED NO MORE THAN 9.1 PER CENT OF ALL PRESCRIP-TIONS FILLED. ANOTHER ITEM OF NOTE IS THAT EYE SPECIALISTS AC-COUNT FOR A GREATER PROPORTION OF ALL PRESCRIPTIONS WRIT-TEN IN THEIR FIELD (66.2 PER CENT) THAN IS CREDITED TO SPECIALISTS IN ANY OTHER FIELD. OF THE 26 PRESCRIPTION TYPES WE HAVE A BREAKDOWN ON, EXACTLY EIGHT CARRIED AN AVERAGE PRICE LAST YEAR HIGHER THAN THE NATIONAL \$2.36 AVERAGE, BUT THESE EIGHT CONSTITUTED 40.8 PER CENT OF ALL PRESCRIPTION NUMBERS AND 56.6 PER CENT OF TOTAL PRESCRIPTION DOLLARS.

ANTI-ARTHRITICS AVERAGE COST WAS THE HIGHEST OF ALL PRE-SCRIPTIONS FILLED, AVERAGING \$5.76 PER Rx. THIS WAS CLOSELY FOL-LOWED BY THE ANTI-INFECTIVES AT \$3.42, SEX HORMONES \$3.38, THERA-PEUTIC VITAMINS \$3.37 AND ON DOWN TO NOSE PREPARATIONS WHICH AVERAGED \$1.30.

WE HOPE SOME OF THESE FIGURES WILL ANSWER MANY OF THE QUESTIONS YOU MAY HAVE IN YOUR MINDS REGARDING PRESCRIPTION PRICING. SHOULD YOU WISH ANY FURTHER BREAKDOWNS, ON ANY TYPE OF MEDICATIONS, WE SHOULD LIKE TO HAVE YOU CONTACT OUR ASSOCIATION OFFICE. THE NATIONAL FIGURES USED CAME FROM VARIOUS SOURCES ASSEMBLED BY THE AMERICAN DRUGGIST MAGAZINE, AND, WE BELIEVE, ARE QUITE FACTUAL. THE ARIZONA FIGURES WERE ASSEMBLED BY THE STATE BOARD OF PHARMACY FROM OUR INDIVIDUAL STORES. THE PHARMACISTS OF ARIZONA ARE DEEPLY APPRECIATIVE OF THE SUPPORT THEY HAVE RECEIVED FROM THE MEMBERS OF THE MEDICAL FRATERNITY AND WANT THEM TO KNOW PHARMACY WILL CONTINUALLY STRIVE TO MERIT THE CONFIDENCE REPOSED IN THEM

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# AMA REVISES THE "ESSENTIALS OF AN APPROVED INTERNSHIP"

An Advisory Committee on Internship, appointed by the Council on Medical Education and Hospitals in the fall of 1951, conducted a study in the past year reviewing the internship in its broadest aspects. As a result of its study the Advisory Committee recommended revisions in the "Essentials of an Approved Internship" which were ratified by the AMA's House of Delegates in December.

Among the changes in the requirements for hospitals offering intern programs were the following: Approval by the Joint Commission on Accreditations of Hospitals; bed capacity increased to 150, excluding bassinets; annual admissions increased to 5,000, exclusive of the newborn, and the autopsy rate increased to 25 per cent.

Under these revisions the Council will approve rotating and mixed internships and straight internships in these specialties—internal medicine, pediatrics and surgery. Straight internships in pathology and obstetrics-gynecology will no longer be approved.

The revised "Essentials" became effective January 1 for new approvals. The autopsy rate of 25 per cent became effective for all hospitals January 1.

A.M.A. News Notes

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# AMA TO CONTINUE STUDY OF DOCTOR DRAFT LAW

The AMA's House of Delegates voted in December to "continue to support whatever measures are necessary to provide essential medical care to the armed services."

The House further authorized and directed the Board of Trustees and the Council on National Emergency Medical Service (1) to follow closely all developments both national and international which might affect the quantitative requirements for medical officers in the armed forces, and (22) to support legislation to provide the number of medical officers required to care adequately for the health needs of the uniformed armed forces.

The House recommended that the President of the United States be requested to defer any call-up of priority 3 physicians under Public Law 779 until the Selective Service System and the Department of Defense have completed processing all physicians in priorities 1 and 2, except for physicians in those groups whose deferment is essential to the nation's health.

Careful study also is to be given in the ensuing months to—physical requirements for medical officers so that physicians with physical defects may be utilized; more effective recruitment methods for career personnel in military medicine; greater use of civilian physicians and hospital facilities in the care of both military and non-military personnel and their dependents; uniform conditions of service to avoid undue competition for medical personnel, and consideration of an equitable point system in the induction of physicians into the armed services.

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#### Insidious Stranglehold On Medical Freedom

In the Foreign Letters section, page 313, of this weeks' (January 24) A.M.A. Journal, there is a very disturbing article which relates how the medical profession in Argentina has lost its last remnants of freedom.

It is tragic that physicians practicing in a socalled republic so close to the United States find their wrists shackled tighter than probably anywhere else in the world, with the possible exception of Russia.

The article states that last year the Argentine congress passed a law authorizing President Peron to reorganize the National Academies of Medicine, some of them more than a century old. The reason: all institutions must conform to the ideals of the Peronistic revolution.

The article contains this disheartening paragraph:

"From now on the academies are no longer free corporations, but institutions directly submitted to the President of the Republic. The last remnant of academic freedom in Argentina thus appear to have been swept away." Continuing, the article says:

"The police can oblige any physician to assist a patient if he has refused to do so. The physician cannot leave the city or stop his professional activities without permission from the Public Health Ministry.... The physician must obey all the orders on his medical service issued by the professional colleges, the professional corporations, or the Ministry of Health. All infractions of the law or lack of obedience will be punished by fines, imprisonment (one to six months), or retirement of professional license.

"A new law on the exercise of the medical profession was approved by the house and the senate of the province of Entre Rios and promulgated by the governor. The new law of 316 articles has produced surprise and alarm in the medical profession of Argentina. . . .

"The present rules for all scientific societies provide that 15 days or more before the meetings take place, there must be requested permission from the police to whom there must be sent the list of speakers and the title of papers to be reported. A policeman, sergeant, or officer of the police is present during every scientific meeting. Up to now all medical societies have obtained this permission in due time and have functioned without interference of any kind. Recently, however, some other important cultural institutions have not been allowed by the police to have their meetings, and for this reason their activities have stopped."

A.M.A. Secretary's Letter

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# Woman's AUXILIARY

#### NURSE RECRUITMENT

The recruitment of nurses is a new project which the Woman's Auxiliary to the American Medical Association has promoted this year on a national, state, and county level. The project was entered into because our country is faced with an appaling shortage of nurses. Both military and civilian population are affected by this shortage.

Since the Woman's Auxiliary is in such close contact with the medical profession it is only natural that they should work on the program in their own community.

Arizona is far ahead of many of the states in the program, because they have been quite active for the past five years. A nurses loan fund was established in 1950 on a state level and loans were available which were adequate for a training period of 3 years. This Loan Fund has stimulated great interest in some counties, and intensive search has been instituted to find girls who were worthy of the scholarship.

For the last two years, Gov. Pyle has proclaimed a State Nurse Recruitment Week. At this time many hospitals have "open house" inviting Junior and Senior high school students to attend. Usually the Supt. of Nurses or Hospital nurse explains the requirements for students entering the nursing school and positions awaiting their graduation. This is not limited to girls alone. Young men are also asked to participate as there is indeed a lack of male nurses.

Five of the seven auxiliaries in the state have organized "Future Nurses Clubs." These clubs are established in the freshman year of high school so that the student will have the required credits for entrance into an accredited nursing school.

The Maricopa Auxiliary and the Nurses Association sponsored and made a float which appeared in the Salad Bowl on New Year's Day. "Career with a Future" was the theme. It was most effective with a hugh replica of a nurses cap and a diploma. Consciousness of the need for nurses and of the career of nursing was established in the minds of many people by this effort. Interest can be stimulated in civic, professional and women's organizations by sending good speakers from the Medical Auxiliary or nurses

speaking bureaus to promote a scholarship within their group. There are many worthy girls who do not have the means to further themselves in this profession, who would be greatly helped by the scholarship and in turn contribute to the honorable profession of nursing.

Mrs. Roy Hewitt,
State Chairman, Health Education
Tucson, Arizona.

## INVITATION TO PHYSICIAN'S WIVES

To All Physician's Wives:

I believe there must be an appealing way to issue an invitation. But I can't seem to find it. You deserve the best. You give the best. Every County Auxiliary, in turn, has gone out of it's way to welcome State Officers this winter. The effort has not been in vain. We have found an understanding in working and playing together. A warm friendliness has resulted. As our good friends now we invite you to the Annual Meeting.

With senses alive to beauty, someone planned the Medical Convention for the heady month of April. How well timed. School is still in session, so Mothers CAN get away. Spring is in the air so Mothers WANT to get away. Do come. The evening will be real fun. And the days reports will make you real proud when you learn the amount and kind of business carried on by mere women.

Cordially,

Ruth E. Schoffman State President

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